

IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

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COMCAST CABLE : CIVIL NO. 12-859  
COMMUNICATIONS, LLC, :  
et al., :  
Plaintiff :  
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v. :  
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SPRINT COMMUNICATIONS : Philadelphia, Pennsylvania  
COMPANY L.P., et al., : February 8, 2017  
Defendant : 9:47 a.m.

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TRANSCRIPT OF MORNING SESSION OF JURY TRIAL DAY 8  
BEFORE THE HONORABLE JAN E. DUBOIS  
UNITED STATES DISTRICT JUDGE

— — —

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Mr. Golla - Cross

3

1 (The following was heard in open court at  
2 9:47 a.m.)

3 THE COURT: Good morning, everyone.

4 ALL: Good morning, Your Honor.

5 THE COURT: Please be seated. All right.

6 We'll proceed with cross.

7 MR. FINKELSON: Mr. Golla.

8 (Pause in proceedings.)

9 THE COURT: Good morning, sir.

10 THE WITNESS: Good morning.

11 CROSS-EXAMINATION

12 BY MR. GOETTLE:

13 Q Good morning, Mr. Golla.

14 A Good morning.

15 Q I know we've met before. My name is Dan Goettle.

16 I took your deposition. I don't know if you recall  
17 that.

18 A Yes. Thank you.

19 Q Mr. Golla, were you in the courtroom yesterday  
20 and did you hear Judge Dubois say that sometimes when  
21 an attorney has time to think about his cross-  
22 examination over night it condenses his cross?

23 A Yes, that is correct.

24 Q Well, that's happened here, so I just want to say  
25 if I had crossed you yesterday, it would have taken

Mr. Golla - Cross

4

1 longer than five minutes. And so I apologize that  
2 you had to stay over and come back, but it is  
3 condensed.

4 A Okay. Thank you.

5 Q My first question for you is, sir, yesterday, you  
6 talked a lot about Sprint's core network and Sprint's  
7 core sites, correct?

8 A That is correct.

9 Q Okay. But yesterday, you didn't talk -- you  
10 didn't mention or talk at all about the patent in  
11 suit in this case?

12 A No.

13 Q And you didn't talk at all yesterday about the  
14 Court's construction of "cellular network?"

15 A No.

16 Q Okay. And you didn't talk at all about whether  
17 Sprint's network includes core network elements under  
18 the Court's construction of "cellular network?"

19 A I did talk about in Sprint's core sites as well  
20 as Sprint's core network, and especially the  
21 subscriber profile system, as well as messaging  
22 centers, are part of the core network.

23 Q But you didn't talk at all about core network  
24 elements under the Court's construction of "cellular  
25 network" as that term is used in the 1999 patent in

Mr. Golla - Cross

5

1 suit?

2 A That is correct, I did not talk about the patent  
3 in suit.

4 Q Thank you.

5 MR. GOETTLE: No further questions, Your  
6 Honor.

7 THE COURT: I ought to do that more often.

8 MR. FINKELSON: That's what I was going  
9 to -- that was fantastic.

10 MR. GOETTLE: Thank you.

11 THE COURT: Is there --

12 MR. FINKELSON: There is no redirect, Your  
13 Honor.

14 THE COURT: Mr. Golla, that concludes your  
15 testimony.

16 THE WITNESS: Thank you very much.

17 THE COURT: Thank you very much.

18 THE WITNESS: Thank you.

19 (Witness excused.)

20 MR. FINKELSON: I stayed up all night  
21 worrying for that?

22 MR. GOETTLE: I do apologize for that.

23 MR. FINKELSON: No, no, no. No reason to  
24 apologize. And, Your Honor, we're just securing our  
25 next witness.

Mr. O'Connor - Direct

6

1 THE COURT: Fine.

2 (Pause in proceedings.)

3 MR. FINKELSON: Your Honor, Sprint calls  
4 Greg O'Connor.

5 GREG O'CONNOR, Defendant's Witness, Sworn.

6 COURTROOM DEPUTY: Please be seated.

7 THE WITNESS: Thank you.

8 COURTROOM DEPUTY: Please state your full  
9 name and spell it for the record.

10 THE WITNESS: Greg O'Connor, G-R-E-G,  
11 O'Connor, O--C-O-N-N-O-R.

12 MR. FINKELSON: Your Honor, may I just  
13 approach to remove the binder?

14 THE COURT: You may. Good morning, sir.

15 THE WITNESS: Good morning.

16 (Pause in proceedings.)

17 DIRECT EXAMINATION

18 BY MR. FINKELSON:

19 Q Good morning, Mr. O'Connor.

20 A Good morning.

21 Q Can you please introduce yourself to the jury,  
22 sir?

23 A Sure. Like I said, I'm Greg O'Connor. I'm the  
24 Vice President of Network Core and Access for Sprint.

25 Q For how long have you worked at Sprint, Mr.

Mr. O'Connor - Direct

7

1 O'Connor?

2 A 17 years, although for two of those I worked for  
3 Sprint doing Sprint services for a different company  
4 called Ericsson.

5 Q So you started at Sprint in approximately what  
6 year?

7 A 2000.

8 Q And where did you work before joining Sprint?

9 A So out of college I actually worked for Aetna  
10 Insurance in Hartford, Connecticut. I then worked  
11 for a small insurance software company also in  
12 Connecticut. And then after that, I actually moved  
13 to Washington, D.C. where I was a government  
14 contractor, a government consultant, doing various  
15 things for the treasury department. And that's --  
16 after that, I went to go work for Sprint and I've  
17 been there since then.

18 Q And what type of work were you doing for the  
19 government in your position in D.C.?

20 THE COURT: Keep your voice up.

21 BY MR. FINKELSON:

22 Q What kind of work were you doing for the  
23 government in your position in D.C.?

24 A Well, mostly, for the Treasury Department, like I  
25 said, but it was software systems and tools and

Mr. O'Connor - Direct

8

1 business management consulting, specifically related  
2 to something called the CFO Act, which was an act to  
3 basically put more financial governance on federal  
4 agencies.

5 Q You mentioned graduating from college. Can you  
6 tell the jury what your educational background is,  
7 what you -- where you went to school, what degrees  
8 you obtained?

9 A Sure, I have a Bachelor's in Business Management  
10 from Southern Connecticut State University, and I  
11 have a Master's Degree in Management Information from  
12 Syracuse University.

13 Q Can you talk to the jury about what your roles  
14 have been over your time at Sprint?

15 A Sure. I started at Sprint in an IT function  
16 where I was responsible for the requirements and  
17 testing of our inventory and provisioning tools  
18 related to our internet business. Basically, Sprint  
19 is a large part of the inner workings of the world  
20 wide web. Many companies' networks make up how the  
21 internet works and we're a part of that.

22 After that, I was asked to actually lead a  
23 team responsible for rebuilding our internet networks  
24 outside the U.S. We had just exited a relationship  
25 with a company called Global One where we were part



Mr. O'Connor - Direct

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1 of a consortium. And with that, we were left without  
2 international internet assets, and we went ahead and  
3 replaced those.

4 After that, I worked for -- in a -- it was  
5 called Staff Manager. It's essentially a chief of  
6 staff function or an executive management training  
7 function where I worked for the Vice President of  
8 Network Development at the time doing staff  
9 functions, so making sure -- you know, making sure  
10 communications was done right, taking care of his  
11 HR-type functions, helping him run meetings, and I  
12 did that for approximately two years.

13 Q Now, you mentioned a period of time where you  
14 were working in connection with Sprint, but not as a  
15 Sprint employee. Can you --

16 A Yeah.

17 Q -- let us know what that was

18 A Yeah, sure. So right as I ended the job as staff  
19 manager, we embarked on a project where I was one of  
20 ten people who did an evaluation of whether -- if we  
21 should get external help to help us run our network,  
22 the operations side of our network. And at that  
23 time, at Sprint, you know, financially, we were  
24 struggling, so we were looking for ways to transform  
25 how we do things and obviously save a little money

Mr. O'Connor - Direct

10

1 and do what we can to improve the business.

2 So the result of all that over two years  
3 was we actually selected Ericsson to help us run the  
4 operations of our network. And then about three  
5 months after we signed that contract, I decided since  
6 I was one of the people who worked on that project,  
7 that I should go over there and help them run it and  
8 say, you know, eat my own dog food, for lack of a  
9 better term.

10 Q When did you come back to Sprint, sir?

11 A Two years later.

12 Q Okay. And what year was that, approximately?

13 A 2012.

14 Q Okay. And once you returned to Sprint, what job  
15 functions were you performing?

16 A I was Vice President of Network Engineering, and  
17 that entailed responsibility for the engineering  
18 functions, basically the care and feeding for our  
19 mobile network, our wireless network, and our  
20 wireline network.

21 Q Okay. And I believe you mentioned that your  
22 current title is Vice President for Network Core and  
23 Access. Do I have that right, sir?

24 A You do.

25 Q Why is that your title?

Mr. O'Connor - Direct

11

1 A It represents the core of what we do. It  
2 represents the most important things that we do. The  
3 biggest parts of my business today are related to our  
4 core network, and a large part of our businesses is  
5 related to things that -- the access part of the  
6 business are things that we purchase from outside  
7 companies, like fiber that we don't own or  
8 connections to other places of the buildings or cell  
9 sites.

10 THE COURT: Keep your voice up, sir.

11 THE WITNESS: Yes, sir.

12 BY MR. FINKELSON:

13 Q That's good, I have an equal opportunity  
14 offender. So both you and I both need to keep our  
15 voices up.

16 THE COURT: Your voice trails off as you  
17 end an answer.

18 THE WITNESS: Okay. I'll fix that.

19 BY MR. FINKELSON:

20 Q "Network Core" in your title, what does that mean  
21 to you?

22 A Yeah, it's the -- it's the elements that are  
23 responsible for our most critical services to our  
24 customers. So in this case when a customer buys a  
25 mobile service from us they're really buying three

Mr. O'Connor - Direct

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1 things. They're buying a voice service, they're  
2 buying a data service, and they're buying a messaging  
3 service. And those things are core to what we do.

4 Q Does your title, Network Core, or more formally,  
5 Vice President for Network Core and Access, does that  
6 have anything to do with this lawsuit?

7 A No, not at all.

8 Q When that title was created was it created for  
9 reasons that have anything to do with this lawsuit?

10 A No. At the time I personally created that title,  
11 I didn't even know this lawsuit existed.

12 Q Have you been in any of Sprint's facilities that  
13 contain core network elements?

14 A Yes, I've been to some.

15 Q Okay. And can you describe that for the jury?

16 A Sure, it's an interesting environment. It's a  
17 foreign environment. The whole purpose of that  
18 building is to house electronics. It's not there for  
19 human comfort at all. As you enter the building,  
20 it's highly secure. I actually am responsible for  
21 them and I can't just walk into them. I have to -- I  
22 have to get people to agree to let me in, and,  
23 actually, they don't let me in alone. They watch me  
24 and make sure I don't get in trouble.

25 When you enter the building you're

Mr. O'Connor - Direct

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1 immediately hit with the noise of it. It's extremely  
2 loud. The chillers are going, they're cooling the  
3 air. There's equipment hum. It's very loud and it's  
4 also very cold. And the environment needs to be set  
5 up so that this equipment operates flawlessly. There  
6 are hundreds of blinking lights at you. As you walk  
7 up and down areas, the equipment is blinking. Green  
8 lights are good, red lights are bad. It's as simple  
9 as that. And there's fiber and copper wires  
10 everywhere. You know, it's interesting to visit the  
11 first time. It's -- but, again, it's not a  
12 comfortable environment. It's really built for those  
13 machines to survive.

14 Q Why all the security in connection with those  
15 sites?

16 A These are our most important elements. They're  
17 not only important for service, but they're -- you  
18 know, in cases, store subscriber data. So these are  
19 highly secure, highly important, and very critical  
20 elements for us.

21 Q Is that where the SPS database is located?

22 A Yes.

23 Q And is that where the messaging servers are  
24 located?

25 A Yes.

Mr. O'Connor - Direct

14

1 Q What do -- in your view, what do messaging  
2 servers do?

3 A They route messages to customers.

4 Q Would you consider that to be an important  
5 function at Sprint?

6 A Absolutely. It's one of the -- as I said before,  
7 one of three things that when people purchase a  
8 service through us they rely on that.

9 Q Okay. Would you consider the messaging servers  
10 to be critical elements?

11 A Yes.

12 Q Why?

13 A Well, I think one, because, like I said, again,  
14 they're a critical service. People rely on that as a  
15 form of communication. And secondary, there's a  
16 public safety component to messaging. You can text  
17 to 9-1-1. So as something that is part of public  
18 safety, it's an important, critical item. There's  
19 also the public alert system. And I'm not sure if  
20 anyone's experienced this before. The noise that  
21 your phone makes, similar to when you would get those  
22 tests on the TV in the past and it would come on --  
23 typically, it's a weather alert, you know, bad  
24 weather is coming, take shelter. We get a lot of  
25 those in Kansas City when I'm there because there are

Mr. O'Connor - Direct

15

1 tornadoes. It could be an Amber Alert. So those are  
2 things that, you know, have a higher obligation,  
3 right? They're -- they become more critical due to  
4 public safety.

5 Q Are there elements involved at Sprint that you  
6 would consider to be non-critical elements?

7 A Absolutely.

8 Q Can you give the jury some examples of those?

9 A Yeah, I think a good example would be billing,  
10 right? It's something that's important to Sprint,  
11 obviously. We don't want to lose data, we don't want  
12 to not be able to bill for services. But if a  
13 billing server goes down or we have a problem with  
14 the billing software, the service for the customer  
15 still works. It's just something that, you know, is  
16 bad for us from a -- from a revenue perspective.

17 Q So just talking about the core and that aspect of  
18 your responsibilities. What -- at a high level, what  
19 are your responsibilities over the core network at  
20 Sprint in your position?

21 A Yeah, so I oversee a group that manages the  
22 planning, the development, the engineering, and the  
23 deployment for everything core network and core  
24 network related. And then on the access side, we're  
25 responsible for managing dozens of agreements with

Mr. O'Connor - Direct

16

1 other companies that provide service to us.

2 Basically, either we purchase fiber from them or  
3 purchase connections between buildings or connections  
4 from one of our buildings to a cell site.

5 Q And with respect to messaging servers in your  
6 position as Vice President of the Network Core, do  
7 the messaging servers fall within your  
8 responsibility?

9 A They do. I think you met two of my employees,  
10 Ramesh and Sean. They work for me.

11 Q And that's Mr. Golla and Mr. Hoelzle, who had the  
12 opportunity to speak to the jury?

13 A Yes. Yeah.

14 Q Each of those individuals report up through the  
15 structure to you?

16 A Up through the structure to me.

17 Q Do your teams have any involvement with  
18 standards?

19 A We -- my team doesn't directly work to formulate  
20 standards. We have another team that does that. But  
21 we are responsible for implementing our services per  
22 standards unless we have a very good reason not to.  
23 And I really couldn't think of a current situation  
24 where we don't use a standard.

25 Q Thank you very much, Mr. O'Connor. Those are my



Mr. O'Connor - Cross

17

1 questions.

2 A Thank you.

3 CROSS-EXAMINATION

4 BY MR. HEIST:

5 Q Good morning, Mr. O'Connor.

6 A Good morning.

7 Q Is it correct you have never read the 870 patent?

8 A That's correct.

9 Q And you've never read the asserted claims of the  
10 patent?

11 A That's right, I have not.

12 Q And you haven't read the Court's claim  
13 construction in this case?

14 A No, I have not.

15 Q And is it correct that you have no engineering  
16 training?

17 A I do not have any engineering training.

18 Q Now, the term "core" is widely used within  
19 Sprint, correct?

20 A We use it in my group because that's what we do.

21 Q And -- but you have usually heard that term in  
22 the context of organizational structure, correct?

23 A Yes, my organization is responsible for core.

24 Q And you were asked some questions about core  
25 network elements, and when you used that term here in

Mr. O'Connor - Cross

18

1 your testimony here today you were not necessarily  
2 using it in the same sense as the Court's claim  
3 construction because you haven't read that, correct?

4 A I believe that -- yeah.

5 Q And you were asked some questions about the  
6 messaging servers and whether they were critical  
7 to --

8 A Uh-huh.

9 Q -- Sprint's business, correct?

10 A I was.

11 Q But you don't know, do you, whether Sprint's  
12 messaging servers perform the function of connecting  
13 communications from Sprint subscribers' mobile phones  
14 to the public switch telephone network or vice versa,  
15 correct?

16 A That's right. I'm not an expert on call path.  
17 That's why I have Sean and -- to help me with that.

18 Q But speaking to those types of functions of the  
19 messaging server, you can't answer that?

20 A I am not an expert on call path in that scenario.  
21 Absolutely.

22 Q Thank you very much, sir.

23 A Thank you.

24 MR. FINKELSON: No need for redirect, Your  
25 Honor.

Mr. Tirana - Direct

19

1 THE COURT: Thank you very much, Mr.  
2 O'Connor.

3 THE WITNESS: Thank you.

4 (Witness excused.)

5 (Pause in proceedings.)

6 MS. RACHFORD: Good morning. Sprint would  
7 now like to play some video clips from a deposition  
8 testimony that's been designated. The witness was  
9 Plarent Tirana. He was appearing on behalf of  
10 Openwave, which is a third party to this litigation  
11 pursuant to a subpoena issued by Comcast.

12 THE COURT: Spell his name.

13 MS. RACHFORD: Plarent is the first name.  
14 It's P-L-A-R-E-N-T. And the last name is Tirana,  
15 that's T-I-R-A-N-A.

16 THE COURT: All right. You may proceed.

17 MS. RACHFORD: And it looks like we need to  
18 turn on the screens, if you don't mind. Thank you.

19 (Pause in proceedings.)

20 (The video deposition testimony of Plarent  
21 Tirana as follows.)

22 PLARENT TIRANA, Defendant's Witness, Sworn.

23 DIRECT EXAMINATION

24 BY MR. RIOPELLE:

25 Q I want to see if I could just go through your

Mr. Tirana - Direct

20

1 education at a high level --

2 A Sure.

3 Q -- after high school. Can you -- could you walk  
4 through that?

5 A Sure. I have a Bachelor in Telecommunication  
6 Engineering from University of Toronto. Then I went  
7 to Italy when I did my Master's in same thing,  
8 Telecommunication Engineering. And I did a Ph.D. at  
9 University of Missouri for Computer Science.

10 Q So when did you get your bachelor's?

11 A 1993.

12 Q And when did you get your master's?

13 A 1994.

14 Q And the Ph.D.?

15 A 2010.

16 Q Were the customers in Italy?

17 A Not all of them. I traveled to Germany, to  
18 France. I'm just trying to remember. I have to look  
19 at my passport, all the visas there, but for sure, I  
20 know Germany and France and England -- and England.

21 Q Did you remain in Italy after the merger?

22 A Actually, I came to the States in 2000.

23 Q When you -- do you recall referring to version  
24 5.5.1? Do you remember that?

25 A I'm sorry, I do not.

Mr. Tirana - Direct

21

1 Q You referred to a version 5.5.1.

2 A Correct.

3 Q And that was the new version that was added or  
4 implemented on the directory as part of the addition  
5 of two-way messaging in Sprint's network?

6 A Yes.

7 Q That 5.5.1, is that Openwave directory software?

8 A Yes.

9 Q Okay. And was Openwave directory software, was  
10 that soft -- was that an evolution of Software.com's  
11 directory software?

12 A Yes.

13 Q All right. And did that -- at that time in 2003,  
14 did the directory involve master and replica servers?

15 A Yes.

16 Q How many master servers, if you recall, were in  
17 use?

18 A There are two views here because one is the  
19 physical servers and the other is a logical entity.  
20 Now, let me break it down.

21 Q Uh-huh.

22 A It's one logical entity --

23 Q Okay.

24 A -- and two physical servers clustered together in  
25 an HA solution.

Mr. Tirana - Direct

22

1 Q HA?

2 A Yeah, for high availability.

3 Q So would -- in general parlance, would you say  
4 then that Sprint's network had one master?

5 A Yes.

6 Q And multiple replicas?

7 A Very correct.

8 Q Do you know physically where the cluster two  
9 servers that form the master server, do you know  
10 where they were located geographically?

11 A Yes.

12 Q Where were they?

13 A Lenexa, Kansas.

14 Q Do you have a recollection of -- at that time,  
15 again, in 2003 time frame, how many replica servers  
16 Sprint used?

17 (Pause in proceedings.)

18 A Best of my knowledge would be four.

19 Q Four? Do you know geographically where they were  
20 located?

21 A That I know for sure. They were in Lenexa.

22 Q Okay. Was the back end database for the master,  
23 was that an Oracle database?

24 A Yes.

25 Q And were the back end master -- the back end

Mr. Tirana - Direct

23

1 databases for the replicas, were those Berkeley DB?

2 A Yes.

3 Q Were the Berkeley DBs supplied by Sleepycat at  
4 that time?

5 A Yes.

6 Q When the new -- when the software on the  
7 directory was updated to version 5.5.1 do you recall  
8 who actually did that update? In other words, would  
9 it have been someone from Sprint or somebody from  
10 Openwave?

11 A I remember that. It was the (indiscernible),  
12 yeah.

13 Q And some questions that are kind of touching on  
14 the issues that you already covered.

15 A Okay.

16 Q Now, you talked a lot about the indexing process  
17 at the LDAP directory?

18 A Uh-huh.

19 Q How long has the directory product that you've  
20 worked with had this indexing process for getting  
21 information?

22 A Since the inception.

23 Q And when was the inception of this LDAP directory  
24 product?

25 A The inception came from Software.com. The time

Mr. Tirana - Direct

24

1 frame should have been anything 1997-1998.

2 Q And that was -- I think you described before that  
3 it was generally available, like GA. Is that about  
4 when that product was generally available, in '97-  
5 '98?

6 A Correct.

7 Q Okay. Now, is that indexing process something  
8 that's specific to the LDAP director project, or is  
9 it a more general computer science concept?

10 A It's as generic as it gets. You want index data  
11 in order to have pass through access.

12 Q So that was around before the LDAP director --

13 A That was --

14 Q -- product?

15 A -- before I was born probably, but yeah.

16 Q Now, what about the Berkeley DB, or the  
17 Sleepycat, how long has that product been around?

18 A That has been around for a very long time. I  
19 don't know exactly. Maybe the beginning of the 90s.  
20 But I cannot be quoted. But for sure before 1997,  
21 yes.

22 Q Okay. So it was around before '97-'98 when --

23 A Oh, absolutely. Yes.

24 Q Now, is the LDAP directory product something  
25 that's specific to the telecom field or messaging



Mr. Tirana - Direct

25

1 field, or is it just a more general product?

2 A Very general. Can be used in IT, can be used  
3 in -- any data that need to be organized is a  
4 directory service. It can be used in medicine, it  
5 can be used in any field that you can imagine.

6 Q What other fields have you worked in with regard  
7 to the LDAP directory?

8 A Mostly, I've worked in location-based, which  
9 still -- all my life -- let me put it this way.  
10 Since I started working for Openwave, I've been  
11 working telecommunications because our clients are  
12 basically, you know, ISBs in general, like  
13 (indiscernible). So I've worked in  
14 telecommunications, but directory services are  
15 everywhere, you know. It's not limited to  
16 telecommunications.

17 Q What other telecommunications companies have you  
18 worked with with regard to this product?

19 A I have worked with HHE, I have worked with  
20 Verizon. At that time it was GTE. It was called  
21 GTE. I'm talking 1999. I worked Telecom Italia,  
22 I've worked with TIM, I worked with Deutsche  
23 T-online, with Virgin in U.K., I've worked in Taiwan,  
24 I've worked in Germany, I've worked in Denmark, I've  
25 worked in Canada, several operators. Yeah.

Mr. Tirana - Direct

26

1 Q So a lot of places?

2 A Is that enough? Yeah. And Comcast as well.

3 Yeah.

4 Q Have you worked in the messaging context with  
5 respect to the LDAP directory in somebody besides  
6 Sprint?

7 A Yes.

8 Q What other companies have you worked with?

9 A The ones that I mentioned.

10 Q What was the earliest that you can remember the  
11 LDAP directory product being implemented in the  
12 messaging context?

13 A You want a specific date? 12<sup>th</sup> December, 1998.  
14 It was the first day I started with (indiscernible)  
15 and I was in Italy. It was Telecom Italia.

16 Q Telecom Italia --

17 A Yeah.

18 Q -- was the name of the company?

19 A Yeah.

20 Q Does -- do you know if Openwave has any  
21 documentation with regard to that initial  
22 implementation that happened back in 1998?

23 A No. Not -- at least I don't have. And I doubt  
24 it from the time would have documentation. They are  
25 not a customer any longer, so there is no point in

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1 having documents, at least for me.

2 Q Do you know -- did you work on that  
3 implementation yourself?

4 A Yes.

5 Q Okay. Did that LDAP directory project -- or  
6 product have the similar query process that we've  
7 been discussing?

8 A Okay. So I think we're getting the same thing,  
9 but I'm going to say it one more time. The LDAP  
10 is -- the LDAP query is identical, has been  
11 identical. It is you do a query, you specify a base  
12 point, you specify some filters, and you specify if  
13 it's a base or a (indiscernible). It's identical.  
14 So especially whenever it comes with a classic  
15 messaging product you do pretty much the same  
16 queries.

17 Now, at Sprint, it was a little different  
18 because this was the more custom for a two-way  
19 product. But, however, per se, the LDAP search is  
20 the same. It's just a search.

21 Q So pretty much anywhere it would be implemented  
22 it would be the same?

23 A It would be the same here, it would be the same  
24 in a medical field, it would be the same in  
25 agricultural. It would be the same. It's just a

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1 protocol.

2 Q So and I guess this is just kind of -- might be  
3 rehashing what you just said. So with respect to the  
4 Telecom Italia, which 1998 you did im -- or you  
5 worked on the implementation there, there, the LDAP  
6 directory, you would have queries going out which  
7 would have some sort of index --

8 A Yes.

9 Q -- that they would use to run the search? The  
10 search would be run on the basis of that index and  
11 then it would retrieve information?

12 A Yes.

13 Q So the same process that was described with  
14 respect to how Sprint's LDAP --

15 A The -- let me repeat it again. The index isn't  
16 the index. It's just made to pick up the data  
17 faster. And since the first version, the index was  
18 there.

19 Q Beyond Telecom Italia, are there any other  
20 companies back in that late 90s time frame when you  
21 started that implemented the LDAP directory product?

22 A Sure. It is -- I was in Taiwan at company called  
23 KIMO, like K-I-M-O, was T-online in Germany, was  
24 France Telecom -- I don't have to spell this -- and  
25 then was Virgin Media in U.K.

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1 Q Sure.

2 A And also TIM, Telecom Italia Mobile.

3 Q And that was the one you referred to before,  
4 right?

5 A Nope, that's Telecom Italia. Telecom Italia is a  
6 cable operator. Telecom Italia Mobile is a wireless  
7 operator.

8 Q Let's see, so the one you mentioned, KIMO, is  
9 that K-I-M-O?

10 A Uh-huh.

11 Q Do you know approximately when they implemented  
12 an LDAP directory?

13 A Give or take year-end of 1999 or beginning of  
14 2000.

15 Q What about T-online?

16 A T-online was definitely 1999.

17 Q What about France Telecom?

18 A That should have been 1999.

19 Q And what about Virgin Media?

20 A 1999.

21 Q Do you know if Sprint ever had the LDAP directory  
22 implemented on the messaging platform itself or the  
23 replica -- one of the replica servers implemented on  
24 the messaging platform itself?

25 A The messaging platform -- at least whenever I

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1 arrived there in 2000, there was a messaging platform  
2 and had a directory as well. And then later on, as I  
3 said, in 2003, we went to version 5.5.5.1.2, and then  
4 2008, on version 6.2.1. But always was attached  
5 there and they were in Lenexa, Kansas, physically,  
6 the servers.

7 Q The servers were right next to each other in  
8 Kansas?

9 A Right next to -- however, as I responded before,  
10 later on, Sprint put other servers in different  
11 geographical locations where the SMSCs were the  
12 Comverse SMSCs.

13 Q Let's see. And I asked you about the indexing  
14 process and Berkeley DB. What about the Oracle  
15 database. Was that something that was around before  
16 the --

17 A Since the inception of Oracle. I mean just the  
18 way the database works.

19 Q So --

20 A You have the data and you have the index. It's  
21 not anything new.

22 Q So it's been around since before 1998 or 1997  
23 when these products first were developed?

24 A Yeah. Yes, for sure.

25 Q And what about with respect to the tree structure

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1 that you were describing?

2 A The B-Tree? Yeah, the B-Tree has been there --  
3 if you look at the data, the algorithm for B-Tree is  
4 old. Yeah.

5 Q And I imagine something you learned about when  
6 you were (indiscernible)?

7 A You learn in school. You learn in school B-Tree.  
8 It's one of the forms how you present the data.  
9 B-Tree is one of them.

10 (The video deposition testimony of Plarent  
11 Tirana concludes.)

12 MR. FINKELSON: Your Honor --

13 THE COURT: Yes?

14 MR. FINKELSON: Sprint calls as its next  
15 witness Mark Lanning.

16 MARK LANNING, Defendant's Witness, Sworn.

17 COURTROOM DEPUTY: Please be seated.

18 Please state your full name and spell it for the  
19 record.

20 THE WITNESS: Mark Reed Lanning, M-A-R-K R-  
21 E-E-D L-A-N-N-I-N-G.

22 THE COURT: Good morning, sir. You may  
23 proceed.

24 MR. FINKELSON: Thank you, Your Honor.

25 DIRECT EXAMINATION

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1 BY MR. FINKELSON:

2 Q Good morning, Mr. Lanning

3 A Good morning.

4 Q Can you please introduce yourself to the jury,  
5 sir?

6 A As you just heard, my name is Mark Lanning. If  
7 you detect a little bit of an accent, it's because my  
8 wife and I have lived in Texas for over 35 years.  
9 And I'm happy to be here today.

10 Q Mr. Lanning, did you prepare a presentation to  
11 assist with your discussion of the issues with the  
12 jury here today?

13 A Yes, I did.

14 Q And do you recognize this as the present -- the  
15 first page at least of the presentation that you  
16 prepared?

17 A Yes.

18 MR. FINKELSON: Your Honor, I'm happy to  
19 approach with a copy of the presentation for you at  
20 this time or we could do that at the end of the  
21 presentation.

22 THE COURT: No, you can do it now. That  
23 would be best.

24 (Pause in proceedings.)

25 MR. FINKELSON: May I approach with a copy



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1 for the witness as well?

2 THE COURT: Yes.

3 (Pause in proceedings.)

4 THE COURT: Ladies and gentlemen, Mr.  
5 Lanning is an expert witness for Sprint. I've  
6 already given you instructions on how you should  
7 interpret the testimony of an expert witness. We'll  
8 first here about his qualifications. We'll then turn  
9 to Comcast and see if Comcast has any objections.  
10 And we will then hear his testimony.

11 MR. FINKELSON: Thank you, Your Honor.

12 BY MR. FINKELSON:

13 Q Mr. Lanning, can you talk the jury through your  
14 background and your experience, sir?

15 A Sure. After working on the family farm in both  
16 Idaho and Washington State for the first 20 years of  
17 my life, I decided it would be wiser to start working  
18 more with my head than my back. So I volunteered for  
19 the U.S. Army when I was 20 years old in 1974, as you  
20 can see by that top part. I didn't know anything  
21 about the Army. I was interested in electronics.  
22 And so I joined the Army Signal Corps because I'd  
23 fooled around with radio kits, built my own radios.  
24 And back then, they had you take aptitude tests for  
25 which areas that you were qualified for, which what

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1 they refer to as MOS, military occupational skill,  
2 that you could join up for.

3 So after taking the test, they showed me  
4 which electronic courses I could sign up for. So I  
5 picked the longest one that had a 30 week course,  
6 five days a week for 30 weeks. And the name was real  
7 obvious that it was going to be real interesting  
8 electronic training because it was name "Fix,  
9 Siphoning, Repair." I had no idea what that meant,  
10 but the recruiter told me it was electronics, so I  
11 chose that.

12 Fortunately, I started after my boot camp  
13 or my basic training, and then advanced infantry  
14 training. This was during Vietnam, so we all had to  
15 go to advanced infantry training before we would go  
16 to our technical training. I attended the 30 weeks  
17 and I graduated as the top graduate out of many  
18 different people in the course. And at that time  
19 they gave you the choice of picking your location for  
20 where you would like to be stationed or continuing on  
21 with another course. And I chose another course, and  
22 that was another 20 week course in advanced computer  
23 training. And I graduated that course as a top  
24 graduate and then picked another course after that.

25 So after a period of two years of constant

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1 training of five days a week, eight -- at least eight  
2 hours a day, then I was stationed in Fort Devens,  
3 Massachusetts. Shortly after that, I was asked by a  
4 special team to join their special team to upgrade  
5 the White House communications staff. And the type  
6 of work I was doing, we were working on all the  
7 equipment that was the top secure equipment through  
8 voice and data communications worldwide for the  
9 military, and they asked me to work on this team with  
10 the White House communications staff to upgrade all  
11 the White House communications for all the embassy  
12 communications for voice, for data, and communicate  
13 with the embassies, as well as foreign countries.

14 Q And did some of that work involve encryption  
15 technologies?

16 A Yes, it was all encryption technology for voice  
17 and for data. So when the President would have a  
18 conversation with any of the embassies or any of the  
19 foreign leaders it would be over these encrypted  
20 circuits, encrypted equipment that we would install.

21 Q What did you do after the Army Signal Corps?

22 A After the Army, I joined a company called IT&T,  
23 not to be confused with AT&T. The International  
24 Telephone and Telegraph was about the same size as  
25 AT&T back then, and they knew of my background and

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1 they were building what we referred to back then as a  
2 message store and forward system. And that system  
3 was like our current email systems or our short  
4 message systems. The embassies around the world  
5 could send messages. We also sold it to two  
6 different airlines where they could send messages  
7 from all their different gates and terminals. You  
8 still see some of that same type of messaging done  
9 today for planes, for scheduling, for crew  
10 scheduling, a lot of that. And I was the member of  
11 the five member development team that actually wrote  
12 all the software for the system.

13 Q Did you go to school why you were working at ITT?

14 A Yes, I did. I had a young family. I had a son  
15 and a daughter, was working full-time at IT&T, and  
16 was going to school full-time at Southern Methodist  
17 University.

18 Q Did you obtain a degree from Southern Methodist  
19 University?

20 A Yes, I did, a Bachelor of Science in Computer  
21 Science.

22 Q And in what year did you obtain that?

23 A 1983.

24 Q Okay. After ITT, can you explain to the jury  
25 what your next stop was?

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1 A As soon as I got my degree, it was time to go to  
2 work for a different company. So I joined Digital  
3 Switch about a month after I got my degree. And that  
4 was Digital Switch Corporation. It's in the Dallas  
5 area. As the name implied, they built digital  
6 switches for telephone networks. And my first  
7 project was to convert the switches that they were  
8 using for their landline networks -- if you remember  
9 back then, there was MCI and Sprint long distance.  
10 You might remember some of the pin drop commercials  
11 for Sprint and all that. Our switches were in those  
12 networks for the landline systems, but then Digital  
13 Switch wanted to expand into the wireless and  
14 cellular, so my first project was to modify with a  
15 team of people their switch so that it could be used  
16 as a switch -- a mobile switching center that you've  
17 seen for a lot of the different presentations. And  
18 we sold that through Motorola, and that was sold all  
19 over the world.

20 Q Did you do software development work as well?

21 A Yes, I did.

22 Q And how about work on standards? Did you do any  
23 standards-related work when you were with Digital  
24 Switch?

25 A Yes, a big part of my work was we were right on

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1 the leading edge of the cellular standards, how all  
2 the different cellular pieces of equipment would  
3 communicate together. I probably need to kind of set  
4 in your minds back then, if you were thinking about a  
5 phone or even seeing anyone use a phone in the 1990s,  
6 the first phones we started with we refer to as bag  
7 phones. They were like a big purse that you would  
8 carry around or you would have it in a car. We  
9 thought we were making major innovations when they  
10 downsized it to the size of the house brick, and we  
11 thought we were really doing some neat stuff back  
12 then when we had a phone the size of a brick that you  
13 would carry around. It weighed about as much too.

14 So we worked on the standards. One of the  
15 key parts of the standards that I worked on was  
16 referred to as SS7, another acronym for you in a week  
17 or two full of acronyms. But that's the signaling  
18 protocol that the network elements used to  
19 communicate with each other.

20 One of the other parts that I worked on  
21 that many of you use or see everyday is the calling  
22 line identity. That was before calling line identity  
23 was used, and then caller ID actually participated in  
24 defining those two standards and how those would work  
25 in the networks.

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1 Q And what was the standards body that you were  
2 involved with in connection with that work?

3 A The standards body we referred to as T-1, and  
4 that was part of a bigger group, ANSI, the American  
5 National Standards Institute, or the American  
6 Standards.

7 Q And were you doing work directly in connection  
8 with ANSI?

9 A Yes, I was attending those meetings, making  
10 contributions. Many of my contributions are adopted  
11 in the standards that are still used today. And  
12 those standards were then later adopted by the  
13 international committees as well.

14 Q What did you do after your time with Digital  
15 Switch Corporation?

16 A I then joined Tandem Computers in 1997. Tandem  
17 Computers had special computer systems that were  
18 being used by the stock exchange, banking systems,  
19 because they were referred to as fault-tolerant  
20 computers. They could have an error or a piece of  
21 equipment could fail and they would still keep  
22 running. So they were highly available or fault-  
23 tolerant systems. So my job was to take those  
24 computer systems and modify those so that they could  
25 provide equipment or functionality for cellular

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1 networks.

2 One of the pieces of functionality you've  
3 seen is an HLR, or an HLR database. My team there --  
4 and I had 200 engineers that I was responsible for.  
5 I was the Vice President of Development before I left  
6 Tandem. And we built an HLR that's still in use all  
7 over the world today for the home location register  
8 functionality.

9 Q Did you do standards-related work when you were  
10 with Tandem Computers as well?

11 A Yes. You've heard about two different standards.  
12 So the challenge for a product supplier back then and  
13 today is to decide what size of market you want to  
14 address with your equipment. For instance, do you  
15 want to just sell it to the companies that are  
16 working with American standard, or do you want to try  
17 to sell your product to the companies that are using  
18 the European standard, do you want to sell it to  
19 Asia? Where do you want to go?

20 So the problems with the standards world is  
21 there are so many of them, is what one of my bosses  
22 would say. He just -- too many standards, and so you  
23 have to deal with it. And so we decided that we  
24 wanted our equipment to be capable of operating in  
25 either an American-based standards system, a



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1 European-based standards system, and in some cases  
2 even for Asia, and they had different standards. So  
3 I had a guy that was responsible just for keeping up  
4 with the standard updates. And he had a large office  
5 and he had binders of all the different standards  
6 from floor to ceiling on all four walls of his  
7 office. And his full-time job was just to keep up  
8 with the standards and make sure that the engineering  
9 groups were updated for any new updates that we  
10 needed to apply to our systems.

11 Q And were you selling equipment both for standards  
12 based on ANSI-41 as well as GSM?

13 A Yes, the two basic standards that you could think  
14 of, it would be the ANSI standards, which are  
15 American -- that starts with A -- and then the  
16 European standards, which is ETSI, starts with E.  
17 That's the easy way. And so those were the two main  
18 standards that we had to build products, and we had  
19 to provide different product software modes for each  
20 of those.

21 Q And it looks like that takes us up until about  
22 1991. What did you do at that point in your career,  
23 Mr. Lanning?

24 A At that point in my career I decided it was time  
25 for me to go off on my own and start my own

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1 consulting business. IN Solutions is the first  
2 company that I started as a consultant. The IN is  
3 more internal industry knowledge. It stands for  
4 "Intelligent Network" Solutions. That was the big  
5 thing back in 1991, how do we add computer systems to  
6 a network that we had referred to as kind of a dumb  
7 network back then? You couldn't do very fancy things  
8 with the network. It would just place calls.

9           Shortly after I started my own business, I  
10 was contacted by a senior member of British Telecom  
11 that I had worked with in the past providing  
12 equipment, and they had asked me if I'd be interested  
13 in taking on a role as an architect and program  
14 manager for their second generation network.

15 Q And what does that mean, an architect and program  
16 manager?

17 A As the name implied, a network architect is a lot  
18 like a building architect. A building architect has  
19 to be involved with all the different facets of a  
20 building and how the building goes together in making  
21 sure that it stands straight and stays there for an  
22 unlimited amount of time after you build it. Network  
23 is the same way. Is the network design -- we have to  
24 design where the equipment would go, how much of the  
25 equipment we would need, and to make sure the network

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1 operated properly.

2 Q Was this a cellular network?

3 A Yes, this was British Telecom's second generation  
4 network. They had a first generation one with the  
5 big phones that I referred to. Their second  
6 generation network was referred to as GSM. That was  
7 part of the European standards. At that time Europe  
8 was quite a ways ahead of the U.S. as far as moving  
9 towards a second generation standard. And at the  
10 time that was the largest cellular network in the  
11 world.

12 Q Did -- where were they based?

13 A In the U.K., and specifically, a lot of my work  
14 was done in -- outside of London area.

15 Q Did the British Telecom cellular network have  
16 messaging?

17 A Initially, we did not have messaging because we  
18 started the network in 1993 in the design, but we  
19 added messaging in 1995. We had heard there was a  
20 concept of messaging. We really were focusing on  
21 getting a good voice network, and then the  
22 functionality and the product people came along and  
23 said we need to add messaging, the short messaging  
24 service. So we added that in 1995.

25 Q And what was your involvement in that process?

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1 A Again, as the architect, I had to figure out how  
2 we would implement messaging to our subscribers. And  
3 so, as the architect, I had to meet with the mobile  
4 phone people and make sure that their functionality  
5 would be compatible with the functionality we had in  
6 the network and we -- or that we supplied by the  
7 network, the short message service centers. We've  
8 referred to them in this case and in the courtroom  
9 I've heard them referred to as message servers.

10 So after making multiple trips to Ericsson  
11 in Stockholm that was supplying one of our mobile --  
12 our line of mobile phones, and Nokia, and then we met  
13 with various suppliers that were supplying short  
14 message service centers, then we had to figure out  
15 all the messages in the network that we needed to do  
16 and functionalities for it.

17 Q And we'll talk about that a little bit more in a  
18 few minutes, but before that, it looks like Telecom  
19 Architects, Inc., is a company that I believe you  
20 started in 1999?

21 A Yes, after I finished with a lot of the British  
22 Telecom work, then I started another company. It's  
23 my own consulting company as well. And I did  
24 consulting with companies like Nokia and Motorola,  
25 both in the handset area as well as network

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1 equipment.

2 Q Have you also done expert consulting work, Mr.  
3 Lanning?

4 A Yes, I have.

5 Q Okay. Can you give the jury a sense of that?

6 A I've done consulting like I'm doing here today  
7 for expert cases. Started in 2000 part-time, and for  
8 seven to ten years was part-time, along with all my  
9 other consulting work that I did with the different  
10 companies in doing network and equipment design.

11 Q Do you do expert consulting work for both  
12 plaintiffs and defendants?

13 A Yes. I don't choose. They -- I guess they  
14 choose me and people call me and want me to work, so  
15 I do work on both sides I guess, as we refer to it.

16 Q And is it a substantial portion of your work in  
17 the telecommunications area, sir?

18 A Yes.

19 Q And what led you to decide to start getting into  
20 the expert consulting field?

21 A I guess I should say, initially, I kind of got  
22 pulled into the first case. I didn't know what I'd  
23 think about doing expert consulting work like this.  
24 But then I found that it was a good way for me to  
25 stay home and -- stay home more with the family, and

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1 we also have a ranch that we produce cattle and  
2 horses at the ranch.

3 To give you an idea, while I was consulting  
4 and working for British Telecom on that seven year  
5 period, I took -- made 77 trips between DFW and  
6 London in seven years and had over 3 million miles.  
7 And so I was gone most of my latter part of my  
8 career, and so it's kind of nice staying home. And  
9 we have 13 grandchildren and two great grandchildren.

10 Q Okay.

11 A So I like to stay home.

12 Q And I know you had an injury on the ranch about a  
13 week ago or so, and I appreciate you being here  
14 notwithstanding that. Can you tell the jury what  
15 your professional affiliations are, sir?

16 A I'm a member, like the other experts you've seen,  
17 of the IEEE, and I'm also a member of the ACM. The  
18 IEEE is for electrical engineers, more of the  
19 hardware side of the house, and then the ACM,  
20 Association of Computer Machinery, is more for  
21 software and engineers. And I'm both hardware and  
22 software, so I'm a member of both those  
23 organizations.

24 Q And does -- with respect to you education, sir,  
25 does the slide I have up on the screen, is that -- is

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1 it accurate in terms of your education and  
2 professional affiliations?

3 A Yes. As I've just mentioned, I've got my  
4 Bachelor of Science while I was working at IT&T.

5 Q That was a nice way of saying you were quicker  
6 than I was on the clicker, so I appreciate -- I  
7 appreciate that.

8 MR. FINKELSON: Your Honor, I move to  
9 qualify Mr. Lanning as an expert in the field of the  
10 invention of cellular technology, including  
11 messaging.

12 (Pause in proceedings.)

13 MR. GOETTLE: No --

14 THE COURT: Thank you. Any objection?

15 MR. GOETTLE: No objection, Your Honor.

16 THE COURT: Then we will receive the  
17 testimony of Mr. Lanning in the field of cellular  
18 technology, including messaging.

19 MR. FINKELSON: Thank you, Your Honor.

20 BY MR. FINKELSON:

21 Q All right. Mr. Lanning, can you explain to the  
22 jury the scope of your current engagement in this  
23 case? Why are you here?

24 A Well, as the -- as the slide says, they -- my  
25 scope of the engagement was to determine whether the

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1 Sprint SMS or MMS systems or message servers  
2 infringed the asserted claims of the 870 patent.

3 Q And was there a key issue, in particular, that  
4 you wanted to address with the jury here today, sir?

5 A And, again, as it says, and I've provided the  
6 date, I was to determine whether Sprint's messaging  
7 servers from 2006 forward are either internal or  
8 external to Sprint's cellular network.

9 Q Why 2006 forward?

10 A That date is not of my choosing. That date is  
11 the date we're given that's referred to as the  
12 infringing period. So the infringing period that I  
13 am to look at for Sprint's network for the period of  
14 infringement starts in 2006.

15 Q And by the period of infringement, are you  
16 referring to the period in which Comcast alleges  
17 infringement has occurred in this case?

18 A Yes, I should clarify that. That's for the  
19 alleged infringement. That doesn't just mean we're  
20 saying they infringed. That's the part where  
21 they're -- Comcast is alleging infringement, starting  
22 in 2006.

23 Q Did you hear Dr. -- let me -- you were here when  
24 Dr. Akl presented his testimony to the jury, sir?

25 A Yes.



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1 Q Did you hear Dr. Akl keep referring to 1999 for  
2 his analysis of this patent that issued in 2005?

3 A Yes.

4 Q Okay. Is 1999 the right time to focus on, in  
5 your opinion, when it comes to the issue of whether  
6 Sprint infringes the Comcast patent?

7 A No, as I said, we're directed to what the period  
8 is that we're to analyze, and the period begins at  
9 2006.

10 Q And did you hear at one point in his presentation  
11 Dr. Akl acknowledge that fact?

12 A Yes, he's acknowledged that fact, and then there  
13 was a lot of conversation about 1999 and networks in  
14 1999.

15 Q And is that why -- did you decide to include a  
16 slide in your presentation that actually is part of  
17 Dr. Akl's slide presentation?

18 A Yes, I think it -- I think it can be confusing.  
19 I've heard dates all around and about what the  
20 networks were and standards, and I'll try to keep it  
21 straight when I talk about dates before 2006. But  
22 for the alleged infringing period, we need to keep  
23 our minds on what the Sprint network was beginning in  
24 2006.

25 Q Could Sprint have infringed a patent that didn't

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1 issue until 2005? Could Sprint have infringed that  
2 patent back in 1999?

3 A You're asking me somewhat of a legal question,  
4 but I think it's safe to say the answer to that is  
5 no.

6 Q But if we're to talk about messaging back in the  
7 1990s, since it sounds like you were living and  
8 breathing it, can you give the jury a sense of where  
9 messaging stood at that point in time?

10 A Okay. Yes, they -- I was in the U.K. I was --  
11 remember, I was back and forth to London during this  
12 time frame. This message is the actual message as it  
13 was sent in the Christmastime. That's why it says  
14 "Merry Christmas 1992." This is before any of us  
15 working in the field really had an idea of what  
16 messaging would be. This is the first one between  
17 two Vodafone engineers where he sent "Merry  
18 Christmas." I think it was December 22<sup>nd</sup>. That's  
19 why.

20 It was first standardized for the GSM  
21 networks. As I mentioned earlier, that the European  
22 networks were years ahead of the American networks  
23 for GSM, and the major players in the U.K., United  
24 Kingdom, at the time were Vodafone and British  
25 Telecom. And so I heard about this message within a

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1 day after it was sent because our competitor had just  
2 sent the message and it hit the presses and it was  
3 like the question, what are you guys going to do  
4 about it and how soon can you get it in?

5 Q And what did you do, in fact, did British  
6 Telecom, in terms of responding to that in the  
7 mid-90s with respect to including messaging?

8 A We first all met with our phone suppliers. One  
9 of our phone suppliers was Nokia, so they had already  
10 had some of the messaging functionality. This is a  
11 Nokia phone that you see. And we met with Ericsson.  
12 Then we rapidly turned the network core design team  
13 on to figure out how we would need to modify the  
14 switches and all the different core network  
15 components. And then we went to decide how we would  
16 procure, or use, a messaging server. We needed a  
17 messaging server.

18 Q And, again, for the jury's benefit, the time  
19 frame of that was in approximately the -- what time  
20 frame?

21 A That was in 1993.

22 Q And so when you were faced with that problem in  
23 1993 when you were at British Telecom, or the  
24 question about how to incorporate messaging servers,  
25 can you take the jury through what you did at British

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1 Telecom?

2 A Sure. Again, taking you back, the concept of  
3 messaging, this was the first message, short message.  
4 It was somewhat of just a thought by a Nokia engineer  
5 that we could send messages without needed to dial a  
6 phone and making a phone call. And the idea was this  
7 could be a lot cheaper for people. We need to go  
8 back. I shouldn't say cheaper; maybe less expensive.  
9 But we need to go back and think about what kind of  
10 phones we had. This phone that you see on the  
11 diagram we referred to as the candy bar phones. They  
12 were either like a Snickers candy bar or something  
13 like that, (indiscernible). Or you had the flip  
14 phones that you would flip open. They had very small  
15 displays and, typically, they were four lines by 12  
16 characters -- or three lines by 12 characters. You  
17 couldn't send very much. And so we didn't really  
18 know, and neither did the product people at British  
19 Telecom, how this message service would be used, how  
20 we would sell it. So the idea was let's just provide  
21 it to keep up with the competitor, Vodafone, and  
22 let's provide it in a -- in the least expensive way.

23 So we decided to use a third party system  
24 for the message server. So we called and contacted a  
25 company called Aldiscon, and they provided what we

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1 referred to as a service bureau approach, and they  
2 also provided the service bureau for Vodafone at the  
3 same time for their messages. And so --

4 Q And when you -- and when you say service bureau  
5 approach what does that mean in the context of your  
6 testimony?

7 A A service bureau to us was we want to call a  
8 separate company that owns the system, that manages  
9 the system. We want them to do all the daily, as we  
10 referred to it, care and feeding of the systems and  
11 pay for the system, and then we would pay them so  
12 much per message for supporting our message systems.

13 Q So is that messaging server external to the  
14 British Telecom cellular network at that point in  
15 time?

16 A Yes, it was. It was actually housed in a  
17 building that we didn't own, and all the equipment  
18 was owned by the other company.

19 Q Was there a point in time when that changed?

20 A Yeah, we realized very quickly that this  
21 messaging thing was really taking off, and one of the  
22 main reasons for it is that they priced that the  
23 call -- at the time a call, if you just made even a  
24 short call, it was 50 cents a minute. I don't know  
25 if you can remember back that far when calls were

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1 very expensive. And they decided they would charge a  
2 message ten cents a minute. So people very quickly  
3 figured out that it was a lot cheaper to send a short  
4 message to communicate than even make a ten second  
5 call. And so it seemed like overnight, the message  
6 systems and the messages exploded to the point in the  
7 beginning of 1998 we were delivering millions of  
8 messaging a day in the network.

9 So as that growth happened, we realized  
10 that we could no longer keep the service bureau type  
11 model, have the second company run the service  
12 message service for us. So we moved the message  
13 servers. We actually purchased two message servers  
14 and moved those inside the British Telecom network.

15 Q Was that prior to 1999?

16 A Yes, it was around 1997.

17 Q And by virtue of those moves, did the messaging  
18 servers become part of the cellular network of  
19 British Telecom?

20 A Yes, we treated them just like any other of our  
21 what I refer to as network elements or core network  
22 elements. They were operated by the same group of  
23 people that our message switches were, that the HLRs  
24 were, all the other key functions that we had in  
25 the -- in the network.

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1 Q When you said message switches did you mean  
2 mobile switches?

3 A I mean mobile switches. I guess the terminology  
4 gets a little confusing and maybe I confuse it  
5 myself. But you have the MSC. I guess you can think  
6 of two or three things. The MSC, the mobile  
7 switching center, is for voice calls. The messaging  
8 center is for messages.

9 Q Okay. And is the messaging center -- is there  
10 another word for messaging center that this jury has  
11 heard throughout this case?

12 A That's either a messaging server or a short  
13 message service center. Now, internally, and  
14 especially with the European standards, we would  
15 refer to that as an SMSC, meaning it's a short  
16 message service center, it's the system that handles  
17 all the short messages.

18 Q As the network architect of British Telecom in  
19 the late 1990s, prior to 1999, what would have  
20 happened had British Telecom not provided short  
21 message service at that time?

22 A It would have been very bad. I can give you an  
23 idea, but when it was the early days of the service  
24 we had some problems. Within an hour of the  
25 messaging service going down we would have thousands

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1 of calls into our customer care center complaining  
2 that they needed the message. We become acutely  
3 aware of how important messaging was to our  
4 subscribers. And so if British Telecom would have  
5 stopped offering a short message service, they  
6 believe that a majority of the customers would have  
7 moved over to the competitor, Vodafone, that had the  
8 messaging service. So I looked at it as a critical  
9 service. We learned real fast that it was critical  
10 to our users.

11 Q Did you hear Dr. Akl talk last week about the  
12 concept of essential services in connection with  
13 messaging?

14 A Yes.

15 Q Okay. Did you hear Dr. Akl communicate that  
16 voice was essential and data was essential, but that  
17 messaging was not?

18 A Yes, I heard that.

19 Q What do you make of that testimony, sir? Do you  
20 agree with it?

21 A No, I don't.

22 Q Why not?

23 A Well, again, let's take ourselves back to the  
24 1999 time frame that Dr. Akl was looking at. If you  
25 look at that phone, that was similar to a lot of the



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1 phones, the size of the display. Now, Dr. Akl says  
2 voice was important. I agree with him on that.  
3 Voice was the main reason for the cellular networks,  
4 initially. Then he says data was important. But,  
5 thirdly, messaging wasn't.

6 Well, as I think back in the 1999 time  
7 frame, people didn't use data very much for these  
8 small displays. You -- we think of email, we think  
9 of browsing the internet on our smart phones. Today,  
10 with the big displays, they're easy to use. Just  
11 think about the difficulty of trying to browse the  
12 internet with a display like that and with a keypad  
13 like that. People weren't using it very much. There  
14 were -- they weren't email and the internet very much  
15 back then. They were making voice calls when they  
16 figured out that they could send message cheaper than  
17 making a voice call. The messages exploded. So I  
18 would put the order of essentiality in the 1999  
19 period as voice, number one; messaging, number two;  
20 and then data, number three, because until the  
21 displays got bigger, the phones got easier to use,  
22 data really didn't take off in the networks.

23 Q So we're going to talk in a couple of minutes  
24 about the opinions that you've reached in the case,  
25 Mr. Lanning, but can you first tell the jury what you

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1 looked at, what was -- what you looked at as part of  
2 your analysis?

3 A Well, the first place I start is the patent.  
4 Some cases have multiple patents. In this case what  
5 we're discussing today is the 870 patent. I read  
6 through it two or three times just to get a good feel  
7 for the patent, what the patent believes was the  
8 invention. And then another key part is the Court's  
9 definitions for the claims in the patent. Sometimes  
10 there's terms in the claims that are disputed by the  
11 parties. They don't agree. So the Court then  
12 provides their definitions for the terms, and you've  
13 seen some of those terms. One of them is for  
14 "cellular network." And so I consider those and make  
15 sure I include those in my analysis.

16 I also consider industry standards. I've  
17 talked a little bit about the industry standards.  
18 I'll talk more about that. There's many industry  
19 standards, but I wanted to look at the different  
20 standards, and specifically the standards that were  
21 applicable to the Sprint network.

22 Then I went on to look at Sprint  
23 documentation because I had to decide, as I said  
24 earlier, the key question, are Sprint's messaging  
25 servers either internal or external to the network?

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1 So I wanted to look and see what the standard  
2 recommended. Then I wanted to look at the Sprint  
3 documentation to see how they really did it. Then I  
4 looked at Sprint's witness testimony and other  
5 witness testimony to help clarify any of the Sprint  
6 network in the documentation. And then a big part of  
7 my work was to receive Dr. Akl's infringement report  
8 because where they're -- Comcast is claiming  
9 infringement and he's working on behalf of Comcast,  
10 he starts by writing an infringement report and  
11 includes all of the things that you've seen, plus a  
12 lot more documents. And then I receive that, review  
13 that, and then I write a rebuttal report that  
14 provides my opinions.

15 Q You said you read the 870 patent two or three  
16 times. Were you referring to at the outset of the  
17 engagement?

18 A Yeah, that's just the outset. I'm just talking  
19 about the very first day or so.

20 Q One of the items on your list is witness  
21 testimony. Have you reviewed deposition testimony  
22 from numerous Sprint witnesses, Mr. Lanning?

23 A Yes.

24 Q Have you also been here for the testimony, either  
25 live or reading the transcripts, for witnesses who

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1 have testified during the course of this trial?

2 A Yes.

3 Q Okay. Have you been doing this for a long time?

4 A What do you mean by "this?"

5 Q Work -- rendering opinions in patent infringement  
6 cases.

7 A As I stated, since 2000. Most of my cases that I  
8 work on are patent cases. Some are other cases like  
9 for contracts or for trade secrets, but most of the  
10 time it's for patent infringement cases.

11 Q Did you hear Comcast's attorneys ask one Sprint  
12 witness after another whether the fact witness had  
13 read the 870 patent?

14 A Yes.

15 Q Did you hear them keep asking whether the fact  
16 witnesses from Sprint had read the Court's claim  
17 constructions?

18 A Yes.

19 Q Is it typical in your practice to see fact  
20 witnesses from the party who is the defendant  
21 reviewing the patent and applying the definitions  
22 applied, or given, by the Court?

23 A No, that's not typical. The fact witnesses, as  
24 the name implies, are to provide facts. And in this  
25 case the Sprint fact witnesses are to provide facts

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1 for their network. I know as I worked on the  
2 networks the last thing I wanted to do was read  
3 someone's patent or do a lot of that when you're busy  
4 trying to design a network and operate a network. So  
5 I don't think it would be proper. To me, they're  
6 here to provide the facts for how the network works  
7 today or worked in the past. And so I wouldn't  
8 include any input from them as far as a claim  
9 construction or how the patent worked. That wouldn't  
10 be proper.

11 MR. FINKELSON: Your Honor, I have some  
12 binders of materials. If I may bring them up to the  
13 Court --

14 THE COURT: You may.

15 MR. FINKELSON: -- and as well to Mr.  
16 Lanning?

17 (Pause in proceedings.)

18 BY MR. FINKELSON:

19 Q So, Mr. Lanning, what I'm bringing up for you  
20 is -- or what Mr. Bebout is helping me bring up to  
21 you is a set of four binders.

22 MR. FINKELSON: I know there's not a lot of  
23 room there, but maybe, Chad, if you can just place  
24 them to be behind Mr. Lanning so that he's got --  
25 they don't cover his table.

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1 (Pause in proceedings.)

2 MR. FINKELSON: As I'm sure the Court is  
3 very pleased to receive, I also have a box of those  
4 same binders for you, Your Honor. Your pile seemed  
5 to be getting low over there and I didn't want to --

6 THE COURT: Yes, please, so that we --  
7 other -- no, you --

8 (Pause in proceedings.)

9 THE COURT: Those binders, ladies and  
10 gentlemen, are hard copies of the exhibits that you  
11 will see on the screen.

12 MR. FINKELSON: And then I'm also bringing  
13 up to Mr. Lanning all of the materials that Dr. Akl  
14 reviewed and you -- Ryan, maybe if you could put  
15 those down to the side. Mr. Lanning also reviewed  
16 them, of course, in his analysis. Those are just the  
17 copies of the binders that Dr. Akl presented to us.  
18 And I am not bringing you another copy of those, Your  
19 Honor.

20 THE COURT: Thank you. Thanks. Mr.  
21 Lanning, it's going to be difficult for you to leave  
22 the witness stand. Be very careful.

23 THE WITNESS: Thank you.

24 (Pause in proceedings.)

25 BY MR. FINKELSON:

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1 Q Mr. Lanning, can you tell the jury what opinions  
2 you have rendered in this case?

3 A Yes, as it shows on the slide, is that I found  
4 that from 2006 to the present, Sprint's messaging  
5 servers are internal to Sprint's cellular network.  
6 And because of that, I have found that Sprint's SMS  
7 and MMS servers do not infringe claims one, seven,  
8 and 113 of the 870 patent.

9 Q And have you prepared a walkthrough for the jury  
10 of the steps that you have done as part of your  
11 analysis?

12 A Yes.

13 Q And is this a summary on the screen for the jury  
14 of what you're going to be speaking to them about  
15 during the remainder of your testimony here today?

16 A Yes, it is.

17 Q So it looks like the first item is "Background  
18 and 870 patent." Again, were you here when Dr. Akl  
19 presented his testimony and he spoke a lot about  
20 functionality?

21 A Yes.

22 Q Okay. Why have you included this slide for the  
23 jury?

24 A Because I wanted to provide a contrast for the  
25 analysis styles or the type of analysis that Dr. Akl

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1 said that he did versus I did. I took a holistic --  
2 what I would refer to as a holistic approach to  
3 determine whether the -- Sprint's messaging servers  
4 were internal or external to their cellular network,  
5 where Dr. Akl is really focused just on  
6 functionality. And I believe that that process of  
7 analysis is flawed, but even if you use his analysis  
8 just based on functionality, I believe that his  
9 results or his opinions are also wrong, and I'll  
10 discuss that later. So whether you use a holistic  
11 approach or a functional approach, I still believe  
12 that the answer comes back to Sprint servers are  
13 internal to their network.

14 Q And by "to their network" do you mean their  
15 cellular network?

16 A Yes, I'll try to be more careful. To Sprint's  
17 cellular network.

18 Q What is the jury looking at here, Mr. Lanning?

19 A Well, I kind of listened to the first part --  
20 listened all -- most of the week, and I feel for you  
21 because if an engineer was sitting in the jury stand,  
22 they might be able to understand three-quarters of  
23 everything that got thrown at them by a lot of  
24 different people. So I thought and I found that it's  
25 more helpful to explain this idea of whether a



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1 message server is internal or external to the  
2 network, to separate out all the acronym soup that  
3 you've been hearing. That kind of reminds me I sat  
4 in a meeting with a guy and he said I just heard you  
5 say a whole sentence and you didn't have one word in  
6 that sentence; it was full of acronyms. And that's  
7 kind of what it sounds like here sometimes.

8           So I'm separating, and what I'm showing  
9 here on the left is an apartment building. And if  
10 you look over on the right part of the screen,  
11 there's an oasis laundromat. And I'm going to go  
12 through the idea of how you analyze a network in  
13 trying to figure out -- and what I've decided is if I  
14 have a laundry service or if I have a washer and a  
15 dryer, those are my functions. I have washing the  
16 clothes and drying the clothes. Those are my two  
17 functions. They're in separate logical units. Most  
18 of us realize that it's probably wise not to mix the  
19 electricity for drying with the washer, so that's why  
20 most of the time the washing unit is separate from  
21 the dryer. And now the challenge for the jury is to  
22 determine, based on functionality, is the washer and  
23 dryer, are they located in the apartment or are they  
24 located external to the apartment in the laundromat.

25           So think for a second what kinds of

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1 information would you need to have to determine  
2 whether the washer and dry were in an apartment, or  
3 internal to that apartment, or whether they were  
4 external to that apartment. Would just the functions  
5 of washing and drying be enough to tell you, even  
6 though both of those functions are done in both  
7 places?

8           So here, I'm showing that I have the washer  
9 and dryer unit in the apartment. I also have washers  
10 and dryers in the laundromat. So if you look and you  
11 say okay, with just washing and drying alone, can you  
12 tell me whether the washer and dryer is located in  
13 the apartment or in the laundromat? And I think  
14 you'll say no, I need more information. Well, what  
15 type of information do you need? Well, you need to  
16 understand other components, a holistic view, like  
17 who owns the washer and dryer, who does the daily  
18 feeding or the daily cleaning of the washer and  
19 dryer, who pays for it when it breaks, who pays for  
20 the water and the power for the washer and dryer?  
21 And physical location is still an important part here  
22 too.

23           Now, if you take the holistic view of the  
24 washer and dryer, it's not hard for us to see with  
25 all of that information what we refer to in

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1 engineering as functional, which is the  
2 functionality; logical, how do I separate the  
3 functions of washing and dryer; and physical, meaning  
4 how many do I have and where do I put them? And if I  
5 look at those, then I can determine where that washer  
6 and dryer is at. And that's what I've done to  
7 determine whether the Sprint messaging servers are  
8 internal or external to their network. Functionality  
9 alone of just handling messages, doing two things.  
10 Store and forwarding the messaging and sending  
11 queries is the same, just like it is for the washer  
12 and dryer.

13           So, as you ask yourself to determine this  
14 key question are Sprint's messaging servers internal  
15 to its cellular network or are they external, think  
16 about whether functionality alone, as Dr. Akl says,  
17 is enough to determine that.

18 Q And did you also look at the 870 patent and  
19 another patent by the same inventor on the question  
20 of whether functionality alone was enough?

21 A So the top part is -- Ms. Aho issued, or the two  
22 patents were applied for, the same day by the  
23 inventor, the same inventor, of the 870 patent. The  
24 top one is the 870 patent and the -- and Ms. Aho is  
25 saying, "The messaging server would properly be

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1 located outside the cellular network in question, for  
2 example, in the internet network."

3 Then this -- another patent that she  
4 applied for the same day says, "A server, which can  
5 be located, for example, in a cellular network or in  
6 the internet." So the point that I'm making by each  
7 of these captions from the two patents from the  
8 inventor is that it's about the location. Now, it  
9 might not be the geographic or physical location, but  
10 there is a concept of a location. Is it located  
11 inside the cellular network or outside, or external,  
12 to the cellular network?

13 Q And, as you said, I believe, the top quotation  
14 comes from PX-2, the 870 patent that's in the jury's  
15 binders?

16 A Yes.

17 Q And the second, lower quotation is from Ms. Aho's  
18 patent that has been marked as DX-198?

19 A Yes, that's correct.

20 (Pause in proceedings.)

21 Q All right. Let's talk a little bit more about  
22 the 870 patent. Can you give the jury a brief sense  
23 of the patent and what's going on in it?

24 A Okay. And the patent is in your binders, as he  
25 just mentioned. It's PX-2. This is one of the

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1 figures in the patent. And there's a key component.  
2 There's a rectangle on the right-hand part of the  
3 diagram. And the acronym is MMSC, that's multi-media  
4 service center. That's the messaging server.

5 Now, one of ordinary skill is -- you'll  
6 hear that expression -- meaning an engineer, a  
7 qualified engineer, working at the time of the patent  
8 would look at this diagram and quickly understand  
9 that this is a diagram that's depicting a European,  
10 or GSM, network. And you say how would an engineer  
11 quickly understand that? Well, first off, there's  
12 acronyms in this -- in these boxes that are unique  
13 only -- unique to European, or ETSI, networks. Plus,  
14 you see these letters, the capital letters that are  
15 in these. These are what we refer to as interface  
16 definitions. And all of those letters are unique  
17 also to a GSM European network that define the  
18 specific interface that's used between those network  
19 elements, meaning how they communicate. We refer to  
20 it as a protocol, but that defines down to the  
21 messages that they send each other all the way down  
22 to the bent position and the bent values of those  
23 messages. And all of this is for a GSM network.

24 Q And have you added the highlighting, sir, that  
25 appears on this slide around the MMSC and also the

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1 cellular network?

2 A Yes.

3 Q Do you agree that the specification of the 870  
4 patent, Mr. Lanning, talks also about CDMA2000?

5 A Yes.

6 Q And what do you make of the discussion of the  
7 CDMA2000 standard in the specification of the 870  
8 patent as it relates to what the 870 patent claims in  
9 claims one, seven, and 113?

10 A Yes, so now I should be clear. They -- the  
11 diagrams that are in the patent are in relation to a  
12 GSM, or ETSI, network. But that doesn't make it only  
13 apply to a GSM, or ETSI, network, because in the  
14 specification of the patent it refers to CDMA2000  
15 networks, and that's a Sprint network. So I don't  
16 want to mislead you that the claims don't apply just  
17 because the diagrams show an ETSI network. But Nokia  
18 and Ms. Aho were focusing the diagrams and examples  
19 on an ETSI network.

20 Q And when it came time to claim, Ms. Aho set forth  
21 her claimed invention in the claims the we're  
22 discussing here in this case, is that right, sir?

23 A Yes. And so the diagrams in the specification  
24 gives an option about whether the message server  
25 should be internal or external to the network.

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1    However, when the claims are written that option  
2    turns into a rule. And, as you can see by the  
3    introduction to claim one, we refer to that as the  
4    preamble, it says "the messaging server external to  
5    the network." And if you look at the bottom where  
6    I've highlighted in the last limitation of the claim,  
7    "the messaging server external to the cellular  
8    network." Now there is no more an option of whether  
9    the messaging server is internal or external to the  
10   cellular network. All three of the asserted claims  
11   require that these messaging servers be external to  
12   the cellular network.

13   Q    And when it comes to the issue of infringement,  
14   is it applying the claims to the accused services  
15   that matters?

16   A    Yes, it's the claims that rule, along with the  
17   Court's construction for the terms in the claims, not  
18   the specification. So my work has to be focused on  
19   the asserted claims and what the claims say.

20            MR. FINKELSON: Your Honor, I'm about to  
21   turn to the second item on Mr. Lanning's list, which  
22   is a discussion of Sprint's cellular network. Might  
23   that be a good time for a break?

24            THE COURT: It is a good time for a break.  
25   It's about 11:12. We'll recess for ten minutes.

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1 (Jury out, 11:14 a.m.)

2 THE COURT: You may step down, Mr. Lanning.

3 And we're in recess.

4 THE WITNESS: Thank you, Your Honor.

5 (Recess taken from 11:15 a.m. to 11:30

6 a.m.)

7 THE COURT: Be seated everyone. You may  
8 proceed, Mr. Finkelson.

9 MR. FINKELSON: Thank you very much, Your  
10 Honor. Before we turn to this, I'm going to ask Mr.  
11 Baird to put up that slide.

12 (Pause in proceedings.)

13 MR. BAIRD: I'm sorry, so is the slide  
14 number on there, is that --

15 MR. FINKELSON: It's associated --

16 MS. BAIRD: -- the slide number --

17 MR. FINKELSON: It's associated with the  
18 other, yeah.

19 MR. BAIRD: Okay.

20 MR. FINKELSON: Slide 42.

21 MR. BAIRD: Okay.

22 BY MR. FINKELSON:

23 Q Mr. Lanning, I've put up on the screen the  
24 definition of the "person having ordinarily skill in  
25 the art" that you have utilized in this case. Do you



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1 see that, sir?

2 A Yes.

3 Q And is that, in fact, the definition that you've  
4 utilized?

5 A Yes. As I explained earlier, when the experts  
6 look at the patent and evaluate the patent and what  
7 would have been understood we have to define a  
8 hypothetical person of ordinary skill of what -- in  
9 my words it would be what would a typical engineer's  
10 qualifications be that would be reviewing this patent  
11 and understand? And that's the definition that I've  
12 used.

13 Q And can you provide that to the jury?

14 A Sure. It's at least a Bachelor's Degree in  
15 Electrical Engineering, Computer Science, or related  
16 field. There's a lot of similar fields like computer  
17 engineering, mathematics. And I also feel that they  
18 needed to have some experience, so at least two years  
19 of experience in the operation networking standards  
20 and/or design of telecommunications networks that  
21 involve messaging gained through education, work, or  
22 other experience.

23 Q Do you understand that Dr. Akl has proposed a  
24 different level of the person having ordinary skill  
25 in the art in this case?

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1 A Yes.

2 Q Are you at least a person of ordinary skill in  
3 the art under both your definition and Dr. Akl's?

4 A Yes, at least that.

5 Q And your opinions that you're rendering here  
6 today with respect to non-infringement by Sprint, do  
7 they apply both under your definition of a person  
8 having ordinary skill as well as under Dr. Akl's  
9 definition?

10 A Yes, they -- my opinions apply equally under  
11 either one of our definitions.

12 Q Thank you.

13 MR. FINKELSON: Can we return to slide 16?

14 BY MR. FINKELSON:

15 Q So we were about to make the turn to Sprint's  
16 cellular network.

17 THE COURT: By the way, was there a number  
18 on that exhibit that was just shown on Sprint's --

19 MR. FINKELSON: It is, Your Honor. It is  
20 slide 16 that appears -- I'm sorry, it was slide 42  
21 that appears in a separate set of slides that we'll  
22 be presenting with Dr. Polish later on this  
23 afternoon.

24 THE COURT: Fine.

25 MR. FINKELSON: So you'll have a copy of

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1 that.

2 THE COURT: And it's slide?

3 MR. FINKELSON: Slide 42. And I'll point  
4 it out, Your Honor, or at least we'll try to when I  
5 get there.

6 THE COURT: Okay. Go ahead.

7 BY MR. FINKELSON:

8 Q Mr. Lanning, can you explain to the jury what  
9 they're looking at on their screens as well as on the  
10 board we have presented to them?

11 A May I step down?

12 Q Sure.

13 MR. FINKELSON: Well, I guess that's not  
14 quite for me to say. Your Honor, do you mind if the  
15 witness steps down?

16 THE COURT: Oh, I'm sorry. I'm busy  
17 looking. You mean --

18 MR. FINKELSON: May the witness step down  
19 to look -- to --

20 THE COURT: What is on that --

21 MR. FINKELSON: It is the identical slide  
22 17 -- it's identical to slide 17 that appears on your  
23 screen.

24 THE COURT: Fine. Yes, the witness may  
25 step down. And, Mr. Goettle, I don't know who's

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1 going to --

2 MR. GOETTLE: It's me, Your Honor, and --

3 THE COURT: -- conduct the cross.

4 MR. GOETTLE: -- I'm good. If -- I'll move  
5 over there if I need to.

6 THE COURT: You may -- you may move if you  
7 need to.

8 MR. GOETTLE: Thank you.

9 THE COURT: Mr. Lanning.

10 THE WITNESS: Okay. If you look at the  
11 diagram, there's two major sections. So the bottom  
12 is labeled "Sprint Cellular Network," which means  
13 everything inside the large oval is part of Sprint's  
14 cellular network. And the yellow that you see is the  
15 Sprint's core network. And so, as I've shown here,  
16 that what's in the cellular network would be the  
17 wireless terminals. We refer to the wireless  
18 terminals -- we call them cell phones, mobile phones.  
19 And I have multiple ones around. And then the other  
20 components that I have on the outside of the yellow  
21 are the bay station systems. And in technical speak,  
22 a bay station system includes this antenna that  
23 you've probably seen with the pole with the different  
24 types of antennas. If you look closely, there's  
25 usually a small building at the bottom of every one

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1 of those. That's where all the computer equipment is  
2 at.

3 So for a by station system, it needs to  
4 have the box and the antenna, and that's why it  
5 (indiscernible) that way. And because it's a  
6 cellular network of many cells that are all  
7 represented by each of the different towers, that's  
8 the cellular network.

9 Now, as I got to the yellow, or the core  
10 network, within Sprint's core network, I'll start up  
11 at the top left. That's mobile switching centers.  
12 As I said earlier, when you see the words "mobile  
13 switching center" you can think of voice mainly, but  
14 they're also very involved in messaging, delivering  
15 messages -- short messages.

16 In the middle I have the messaging servers.  
17 Those are both the short messages servers for the  
18 short messages as well as the messaging servers for  
19 the multi-media messages that I'll explain in detail  
20 (indiscernible).

21 Now, a couple of the databases I have, I  
22 mentioned earlier that I built one of these for  
23 Tandem Computers when I worked at Tandem Computers.  
24 Home location register is what that stands for. This  
25 keeps a lot of the information from the subscriber's

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1 profile, what you've signed up for, where your  
2 location is at. So when somebody calls you on your  
3 cell phone the mobile switching center needs to query  
4 the subscriber database to find out where you're at  
5 in the network. And the home location register will  
6 have your location in the registry. That's why they  
7 refer to it as the home location register.

8 Another database is the subscriber profile  
9 database. That has other information on the  
10 subscriber that I'll describe more in detail, but the  
11 messaging servers use a lot of that information. And  
12 the PDSN, that's the packet part of the network, the  
13 packet part of the service mode. This handles the  
14 internet-type communications in the network. And  
15 internet communications are all packet-based. That's  
16 why they refer to them as packet.

17 Q And is the core network, as you've depicted it,  
18 within the Sprint cellular network?

19 A Yes, it's all inside.

20 Q And this is a drawing that you came up with,  
21 correct?

22 A Yes.

23 Q Thank you.

24 (Pause in proceedings.)

25 Q Can you -- one of the items that you referred to,

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1 of course, in the course of your analysis in this  
2 case is the Court's claim definitions that appear in  
3 the jury's binder, is that right, sir?

4 A Yes.

5 Q Can you walk the jury through how the diagram  
6 that you have prepared compares to the Court's claim  
7 construction?

8 A Okay. Now, I'm using the same slide as I just  
9 walked you through on the left, but now I've put up  
10 the Court's definition for cellular network. And if  
11 you notice, the cellular network includes a wireless  
12 terminal and a bay station system. And those are the  
13 two different types of components that are on the  
14 outside -- outside of the yellow, but inside the  
15 cellular network, Sprint's cellular network.

16 Then the construction goes on to state that  
17 the -- again, the core network elements "which may  
18 include" and then it lists the various elements that  
19 it should include. And so I've shown that each of  
20 those elements that the Court's construction has are  
21 all inside the Sprint core network, as I show here in  
22 the yellow at the bottom of the slide.

23 (Pause in proceedings.)

24 Q A lot of talk about SMS, a lot of talk about MMS.  
25 Can you just refresh the jury on the difference

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1 between the two when it comes to a more technical  
2 sense?

3 A Well, I chose the SMS example because thinking  
4 back on the displays and thinking back, a lot of the  
5 abbreviations people use today were created many  
6 years ago with these small displays and these real  
7 awkward 12-digit keypads. For instance, if you  
8 needed to do the letter C, you had to push the number  
9 two button three times, if you remember, if you've  
10 ever done that. So it was real awkward sending  
11 messages. So people came up with real interesting  
12 abbreviations. So I've used that on the left. And,  
13 typically, the maximum size a message could be sent,  
14 and it would all be text and characters -- we didn't  
15 have emojis and all of that back that -- it would be  
16 160 characters per message.

17 Now, with the success of short message  
18 service, everyone wanted to have -- many people  
19 wanted to have a service where they could send not  
20 only text, but they could send pictures, they could  
21 send video, they could send audio, and that was a  
22 very different set of requirements for the network to  
23 be able to supply that in for the phones. And so  
24 that's what it's called multi-media messaging  
25 service. The multi-media means that I can have, as



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1 the name implies, more than one type of media that  
2 goes on the message. And I couldn't resist putting a  
3 picture of my five-year-old grandson's first fish.  
4 He was pretty jazzed about it when he caught that.  
5 And so the media in this case would be a picture,  
6 another type of media would be the text.

7 Q In doing your analysis in this case, have you  
8 looked at both Sprint's SMS and Sprint's MMS?

9 A Yes.

10 Q And are we going to walk through each of those in  
11 turn?

12 A Yes.

13 Q Okay.

14 MR. FINKELSON: Before we do, Mr. Baird, if  
15 you could go back to slide 17, please?

16 BY MR. FINKELSON:

17 Q Mr. Lanning, slide 17 is the visual depiction of  
18 the board that you just walked the jury through. Is  
19 it your opinion, sir, that Sprint's cellular network  
20 and Sprint's core network look as you have depicted  
21 on this slide 17?

22 A Yes, definitely.

23 Q Are there other core network elements as well in  
24 Sprint's core network?

25 A Yes, there's many more. I've included the ones

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1 that are relevant for this trial.

2 Q In your opinion, sir, having listened to witness  
3 testimony, having analyzed documents, having looked  
4 at the standards, having looked at the patent, looked  
5 at the Court's claim definitions, does Sprint's core  
6 network of Sprint's cellular network include mobile  
7 switching centers, packet switching nodes, messaging  
8 servers, subscriber databases?

9 A Yes.

10 Q And does Sprint's cellular network also include  
11 wireless terminals and bay station systems?

12 A Yes.

13 (Pause in proceedings.)

14 Q Let's start with SMS, if we could, Mr. Lanning,  
15 and then we'll do MMS after that. What have you  
16 depicted, Mr. Lanning, in slide 23? What's shown  
17 here?

18 A These are the steps, or the initial steps, that  
19 occur when a user sends a short message to the  
20 network. When you key in the message and push send  
21 it first goes to the bay station system that I'm  
22 showing by the blue dotted arrow and line to the --  
23 to the tower. Then the tower forwards it to the  
24 mobile switching center. And remember, before, I  
25 said the mobile switching center does more than just

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1 voice switching. It actually receives these short  
2 messages. So it's used to receive short messages and  
3 send short messages as well as voice calls. Once the  
4 mobile switching center receives the message, it  
5 forwards that short message to a messaging server.  
6 In this case, it's specifically a short message  
7 service center.

8 Q And would that be an SMSC?

9 A Yes.

10 Q And what -- in your opinion, sir, what are the  
11 functions performed or some of the functions  
12 performed by Sprint's SMSCs?

13 A The SMSC does many more functions than I've even  
14 listed on the slide, but the main functions, as you  
15 can see, that I've highlighted in red with the text,  
16 first, it receives the message and then it needs to  
17 query subscriber databases to understand what to do  
18 with the message. It also provides a screening  
19 function for messages, and I'll discuss that a little  
20 more in detail a little later. Blocking a text  
21 message -- in some cases it blocks the text message.  
22 In other cases it routes the text message to other  
23 networks, and then it does a store and forwarding of  
24 messages. And I guess I haven't mentioned that for  
25 the messaging service, we refer to it as a store and

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1 forward type service. What we mean by that,  
2 technically, is that if a person sends a message, the  
3 recipient doesn't need to be online, meaning the  
4 phone doesn't need to be on. And so the SMSC needs  
5 to save the message until the person is -- the  
6 destination or recipient is ready to receive it, they  
7 turn their phone on. So that's a little different  
8 than if you make a call and you're expecting someone  
9 to answer the phone. You can send a message and they  
10 can pick it up when they want to or when they turn  
11 their phone back on.

12 Q Okay. Are you familiar with the Court's  
13 definition of the term "messaging server" in this  
14 case that the jury has in its binders?

15 A Yes.

16 Q Does Sprint's messaging servers for SMS, its  
17 SMSCs, perform the functions described in the Court's  
18 definition?

19 A Yes, it definitely does, plus many other  
20 functions to support the whole short message service.

21 Q I've turned to slide 25. What are you depicting  
22 for the jury here, Mr. Lanning?

23 A This is a case where you see the stop sign in the  
24 messaging server that a message is being blocked.

25 And so -- and I've given the person sending the

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1 message a name, Chris, sends the message to the --  
2 through the mobile switching center to the messaging  
3 server, and I'm showing lines, the dotted lines, to  
4 the subscriber profile databases.

5 Now, the SMSC can block a message depending  
6 upon information that it receives from the subscriber  
7 databases. First, it can decide that the destination  
8 or the recipient hasn't paid the subscription or they  
9 don't want a subscription to messaging or their phone  
10 doesn't have the capability. They block it. In  
11 other cases it could be -- what's typically done is  
12 parental controls. So if you want to have what we  
13 refer to as a white list, meaning family members that  
14 can send messages to your child or -- then those are  
15 accepted, but if -- then it's not on there, or, we  
16 refer to it as a black list, messages that you don't  
17 want to go to your child, then SMS can stop that.  
18 And so that's that screening and blocking type  
19 functionality.

20 Q You just said the SMS can stop that. What piece  
21 of equipment were you referring to?

22 A I'm sorry, the SMSC, the messaging server where  
23 the stop sign is at.

24 Q Okay. Can the message -- does the messaging  
25 server also make decisions in an instance where you

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1 have somebody who is sending a text message, who is a  
2 Sprint subscriber, to a recipient who is not a Sprint  
3 subscriber?

4 A Yes, as I've shown by this slide, you have the  
5 messaging server, and if you send a message to  
6 someone and they're not on the same network, so if  
7 you're a Sprint subscriber and you're sending a  
8 message to someone that has a cell phone on the  
9 T-Mobile network, the SMSC, or the messaging server,  
10 needs to understand that based -- and it does  
11 understand that based on its queries of the  
12 databases. Then it routes that message to the  
13 T-Mobile network.

14 Q Is it the messaging server that makes that --  
15 that performs that routing, sir?

16 A Yes.

17 Q What are you depicting for the jury, Mr. Lanning,  
18 in the next slide, slide 27?

19 A At a high level, what I'm depicting here is the  
20 messaging server is doing the forwarding to Jen  
21 that's over on the left-hand side of the screen, and  
22 Jen is also a Sprint subscriber. So this is what we  
23 would refer to technically as a Sprint-to-Sprint SMS,  
24 and the messaging server would do the forwarding.

25 Q Do you agree with Dr. Akl, sir, that Sprint's

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1 accused messaging servers are not performing  
2 essential functions?

3 A No.

4 Q Why not?

5 A Well, as you can see by the drawing and the  
6 examples that I gave you, is the messaging server is  
7 in the middle of all the messaging. It actually  
8 queries these databases. And there's two data --

9 (Pause in proceedings.)

10 A There's two database -- there's two databases.  
11 The one on the top is "HLR," the one on the bottom is  
12 labeled the "SPS." Now, Dr. Akl has said that both  
13 of those are essential and they're part of the core  
14 network. Dr. Akl has also said that the mobile  
15 switching center is part of the core network. He's  
16 also said the PDSN for data is part of the core  
17 network, but he has said the messaging servers are  
18 not part of the core network. And if you look,  
19 they're in the center in the heart of everything  
20 that's going on with messaging. But you might ask  
21 yourself the question why does he do that? Well, Dr.  
22 Akl has to show that these messaging servers are  
23 external to the network in order to show  
24 infringement, and I don't believe that they are or --  
25 and I also believe they're essential. If you don't

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1 have a messaging server, you don't have any interface  
2 to a mobile switching center, you don't have any  
3 interface to these databases that he says are  
4 essential, nothing is querying those. So just kind  
5 of think logically for a minute is why would a  
6 database that gets queried be essential and not the  
7 system that's actually sending the database the query  
8 and then acting on the response once it sees the  
9 query? It just doesn't seem very logical to me.

10 Q Let's start where you started your analysis with  
11 respect to SMS. Where was that, sir? Where was the  
12 start of you focus?

13 A Well, coming in to the case, I didn't know where  
14 the messaging servers would be. So to me, the  
15 obvious places to start would be the standard. What  
16 standard does Sprint use for their network, what set  
17 of standards? And then let's look at the standards  
18 to see what the standards recommend for where those  
19 servers should be in the network. So I started with  
20 the relevant standards. The relevant standards would  
21 be, I explained earlier, the American standards. And  
22 what you see on this slide here is one of the first  
23 standards, the 1997 ANSI-41 standard. It has a lot  
24 of different numbers in there, but this is the  
25 version of the American standard that was released in



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1 1997. And this is what Sprint, when they build their  
2 cellular network, they use this set of standards.  
3 It's just not one -- this one document, but it's a  
4 whole set of documents.

5 Q And are you referring to what has been marked as  
6 DX-3 that appears on your slide 29?

7 A Yes.

8 Q Why start with the standards, Mr. Lanning?

9 A Well, I wanted to start with a foundation.  
10 Usually, when -- in my experience working with  
11 British Telecom designing the network, we had  
12 hundreds and even thousands of different functions  
13 that we had to provide in our cellular network.  
14 Instead of trying to make that all up on our own, you  
15 look to the standard to see how the standard divides  
16 the functions and groups them together into different  
17 pieces of equipment. Now, is -- why is that? Well,  
18 that's one way of just being methodical and being  
19 able to divide all the functionality. But there's a  
20 real historic reason why this is done.

21 The first generation networks were provided  
22 by a single supplier and, typically, it was the  
23 mobile switching center supplier. And so the network  
24 operators were somewhat held hostage by that  
25 supplier. They paid what the supplier told them to

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1 pay, they got their equipment when the supplier told  
2 them that they would get the equipment, and they  
3 would get updates and upgrades when the supplier got  
4 around to doing it. So a lot of the network  
5 suppliers said no more for second generation, we  
6 definitely want to be able to mix and match and  
7 create a competitive environment for suppliers  
8 between these different types of nodes. And so  
9 there's a logical grouping of functionality and then  
10 an interface that's standardized between these  
11 logical functional entities, the functional groupings  
12 that we refer to as -- or I refer to as logical  
13 entities so that they can communicate together with  
14 each other.

15 Now, if I'm a supplier, like I was, and  
16 you're competing in an area, like I did for the HLR,  
17 if I need to supply an HLR to Sprint or a Verizon or  
18 an AT&T, I need to know first what standard is that  
19 operator compliant with, and then I need to make sure  
20 my interfaces work exactly like they're supposed to  
21 so that when we move our HLR into their network, it  
22 will communicate with the other network elements like  
23 it should. And so the first place you start is the  
24 standard. What does the standard recommend how these  
25 functions should be divided up?

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1 Q All right. Well, let's talk about the ANSI-41  
2 standard, DX-3, can you give the jury a better idea  
3 of what this standard is?

4 A This standard is -- it was in 1997. It's ANSI,  
5 so it's for the American standards. That means it's  
6 for the network operators that are compliant with the  
7 network standard. It had previous revisions before,  
8 but the first ANSI, the American National Standard  
9 publication was in July 1997.

10 Now, this is not a small document. I think  
11 you saw the big binder that Dr. Akl had during his  
12 testimony. It's around 1,500 pages. So it's not  
13 like a white paper that's 20 pages that just says we  
14 recommend you do this and that. It goes into a lot  
15 of detail. 1,500 pages, if it's printed one side, is  
16 three reams of paper, and this is one of the  
17 standards that a network operator needs to use.

18 Q And, specifically, a network operator in what  
19 type of network?

20 A This would be for a network -- would be an  
21 ANSI-41 or an -- or a CDMA2000 network, which is  
22 Sprint's network.

23 Q Are there a different set of standards for  
24 GSM-based networks?

25 A Yes. Like I mentioned earlier, you have two

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1 families to think about. You have the European  
2 family standards and you have the American family  
3 standards. So for Sprint, they follow the ANSI, or  
4 the American family standards. Other operators, like  
5 AT&T, follow the ETSI standard family, or the GSM  
6 family of standards. That's one of the reasons why  
7 you can't just go into a phone store and buy a phone  
8 at Sprint and use it on the AT&T network. They're  
9 not compatible.

10 Q Do standards play a role in ensuring that the  
11 Sprint device can speak to the AT&T device?

12 A Well, they ensure that the Sprint phone that you  
13 buy at a Sprint phone store can work on a Sprint  
14 network. They don't ensure that it works on an AT&T  
15 network because AT&T is based on a different  
16 standard, the GSM standards. And so if you see it's  
17 not just the phone store or the cellular operator  
18 stopping you from using the phone. It's actually a  
19 real reason that the phone will not interoperate with  
20 those different -- between those two standards.

21 Q I've been told that your diagram is perhaps  
22 blocking counsel's view from Mr. Goettle's side, so  
23 I'm just going to move it down to the floor so it's  
24 out of his way.

25 (Pause in proceedings.)

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1 MR. FINKELSON: Is that better?

2 MR. GOETTLE: Thanks.

3 BY MR. FINKELSON:

4 Q Continuing on in the ANSI-41 standard, what are  
5 you showing on slide 31 from the standards, sir?

6 A The standards are referred to as recommendations,  
7 but why I included this slide is to give you a feel  
8 of all the different information that's in this 1,500  
9 page document. So it goes into, if you look at  
10 chapter five, all the different signaling protocols  
11 that are required, and that means all of the  
12 communication messages and the protocols that are  
13 there, and for all the different procedures in  
14 chapter six --

15 Q And --

16 A -- as an example.

17 Q And when you see the term "recommendation, as  
18 included in the ANSI-41 standard, does it -- does  
19 that mean mandatory?

20 A It doesn't mean you must do it. And there's some  
21 parts of the recommendation that are simply that, we  
22 recommend that you do it this way or that way. Other  
23 parts of the recommendation are a little more  
24 stringent, and that's for the interfaces. As I  
25 explain later, you can't have interfaces that are

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1 inconsistent when the different network elements are  
2 communicating with each other.

3 Q I've turned, Mr. Lanning, to slide 32 to a  
4 diagram that I believe the jury has seen on a few  
5 occasions in this case, but can you explain to the  
6 jury what you are depicting here on slide 32 and with  
7 the addition of your highlighting?

8 A And this slide is from the standard. It's a page  
9 out of the standard. It's figure two and they refer  
10 to it as the network reference model. So when an  
11 engineer looks at this, this is what we look at to  
12 figure out okay, how do I divide the functionality up  
13 into different logical entities? And they're  
14 referred to in the quote, and I've highlighted,  
15 "functional entities and associated interface  
16 reference points that may logically comprise a  
17 cellular network." So this is a starting point. I  
18 have hundreds -- like in British Telecom, I had  
19 hundreds of pages of functionality. We then mapped  
20 each of those functions into each of the different  
21 boxes that you see here, and those are logical  
22 entities. We don't know where -- at this point you  
23 don't know where that logical entity is at  
24 geographically, there's no -- physically, you don't  
25 know how many. This is just about mapping

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1 functionality to a logical collection -- logical  
2 collection of functionality.

3           The other key point here is you see a  
4 circle with letters in there. Those are the  
5 specifications for the interfaces. For instance, the  
6 "MC" that you see at the bottom to the HLR has the  
7 interface and that is the specific interface  
8 definition in this document that describes how the  
9 messaging center communicates with the home location  
10 register.

11 Q In your opinion, sir, what does the network  
12 reference model in the ANSI-41 standard, DX-3, show?

13 A Well, it shows that the message center -- we've  
14 used two or three different acronyms for it. The  
15 standard calls a message center an MC. I've referred  
16 to it as an SMSC. And this is -- and it says that  
17 it's an entity that stores and forwards short  
18 messages. And it also shows that it's part of the  
19 network reference model or --

20 Q Does this -- I'm sorry, sir. Go ahead. I  
21 didn't mean to --

22 A -- or the core network.

23 Q Okay. Does the message center -- excuse me, bad  
24 question. Is the definition of "message center" that  
25 you show on figure -- on slide 33 directly from the

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1 ANSI-41 standard?

2 A Yes, I took this right from the standard.

3 Q Was the same true of the definition of "network  
4 reference model" that you just shared with the jury a  
5 moment ago on slide 32?

6 A Yes.

7 (Pause in proceedings.)

8 Q Tell the jury what you tried to do with respect  
9 to the network reference model, if you would, Mr.  
10 Lanning, as it relates to the equipment in Sprint's  
11 cellular network, as shown on the diagram that you've  
12 shared with the jury.

13 A What I've done with this slide is now you see the  
14 network reference model from the standard that I've  
15 included here in yellow, and then I've included each  
16 of the different Sprint elements that are associated  
17 with that. And so I think there should be more.

18 Q There are. I'll go back one though so we can --  
19 you can see the first one.

20 A And so --

21 Q So go ahead, sir.

22 A Right. So here is the reference model and you  
23 see the bay station, the bay station system, to be  
24 specific, because it has the box and the tower. And  
25 the next, that's the mobile terminals, or the



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1 wireless terminals. Those are the message switching  
2 centers. MSCs is the acronym we use for that.

3 Q And you said message switching center.

4 A I'm sorry, mobile switching centers. I've got  
5 messaging on the brain here.

6 Q Understood.

7 A Those are the mobile switching centers.

8 Q And what's that?

9 A That would be the HLR, the home location  
10 register.

11 Q And lastly?

12 A And those are the messaging centers.

13 Q The ANSI-41 standard in 1997, was it then  
14 followed by additional standards, Mr. Lanning?

15 A Yes, the standards are living documents. As new  
16 services and features are added to the networks and  
17 new functionality, the standards are updated to  
18 follow that functionality and provide recommendations  
19 how that's implemented. The previous version was  
20 issued in 1997. This is a version in 1999, two years  
21 later.

22 Q And by this, are we referring to DX-4 that has  
23 been admitted into evidence?

24 A Yes.

25 Q And what is the title of DX-4, sir?

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1 A "Network Reference Model for CDMA2000 Sprint  
2 Spectrum Systems."

3 Q Would that be a system, in your opinion, that is  
4 the -- that Sprint's cellular network is based upon?

5 A Yes, that's Sprint's system.

6 Q And, again, for the benefit of the jury, what is  
7 the date of this network reference model, DX-4?

8 A December 13, 1999.

9 Q Have you highlighted that on slide 36 for the  
10 ease of the jury's reference?

11 A Yes.

12 Q Does this network reference model include an  
13 explanation of its purpose and scope spelled out in  
14 DX-4?

15 A Yes.

16 Q And have you included some of that for the  
17 benefit of the jury and can you read it to them, sir?

18 A Yes, I have on the bottom the purpose and scope,  
19 that it recommends the basic 3GPP2 wireless network  
20 reference model.

21 Q Let's spend a few minutes look at that network  
22 reference model in DX-4. Have you depicted that on  
23 slide 37?

24 A Yes.

25 Q Okay. And just as -- at a high level, and we'll

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1 dig down a little bit deeper, what does the network  
2 reference model depict from DX-4?

3 A The network reference model for the CDMA standard  
4 tries to include everything that's relevant for an  
5 engineer to look at the network reference model,  
6 what's inside the network and then what other  
7 networks it connects to. And then it additionally  
8 defines what's in the core network, or the words that  
9 it uses is the "collective entity."

10 Q And is the definition of "network reference  
11 model" that we saw in the 1997 ANSI standard carried  
12 over into the same family of standards as they  
13 progress over time, including in the 1999 version,  
14 DX-4?

15 A Yes, it is. And as you heard Mr. Lipford, the  
16 person at Sprint that works on the standards, he  
17 explained the same thing, that it means the same  
18 thing, that "network reference model" in 1999 meant  
19 the same thing as the "network reference model" for  
20 the 1997 standard.

21 Q With the additional elements that are shown as  
22 reflected here as compared to 1997?

23 A And, again, it grows. You see more -- as you go  
24 on, you'll see more and more boxes and different  
25 shapes, geographic sym -- or geometric symbols here

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1 as you go forward.

2 Q Now, you referred, sir, to the collective entity,  
3 which we just looked at on slide 37. That's straight  
4 out of the document itself, correct, sir, without any  
5 highlighting slide 37?

6 A Yes, that's correct.

7 Q And then I believe you've added some  
8 highlighting, again, for the ease of the jury's  
9 reference. What are you showing on slide 38?

10 A This is the -- what the standard defines as the  
11 collective entity. We commonly refer to that as the  
12 core network. Again, Mr. Lipford also explained  
13 yesterday that the standards groups even call it the  
14 core network, and I'm just showing what's already  
15 been defined. I'm just highlighting it there.

16 Q Where does the 1999 CDMA2000 standard, DX-4,  
17 depict the messaging center?

18 A It's inside the core network. So the  
19 recommendation here is -- when an engineer looks at  
20 that is the standard is recommending that the message  
21 center be inside the core network.

22 Q Are there items -- well, let's take them from the  
23 left to the right. What is depicted on the far left  
24 side of the diagram in DX-4 under the box "MS," or  
25 labeled "MS?"

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1 A The "MS" is mobile station, so what's depicted by  
2 the large part of the diagram on the left side are  
3 the components of the mobile station or the cellular  
4 phone.

5 Q And then is that labeled in the diagram as a  
6 composite entity?

7 A Yes.

8 Q Is there another composite entity also shown in  
9 DX-4?

10 A Yes, if you look to the right and inside the core  
11 network -- and I'll try to circle it -- there's  
12 another one with the shading that is defined as a  
13 composite entity, and it's labeled "BS."

14 Q And in terms of its placement inside the dotted  
15 line versus outside, were you here for Mr. Lipford's  
16 testimony yesterday, sir?

17 A Yes.

18 Q Okay. And what is your understanding of the  
19 designations in this diagram with respect to the BS?

20 A My understanding is the same as Mr. Lipford's, is  
21 depending on the implementation, engineers can either  
22 consider the bay station subsystem -- that's the  
23 tower with the box -- either inside the core network  
24 or outside the core network. In this case they've  
25 said it's all one composite entity, meaning it's

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1 together, but in this case it could either be in the  
2 core network or it could be outside the core network,  
3 but it's being shown inside the core network in this  
4 diagram.

5 Q In either instance, is it part of the cellular  
6 network?

7 A Yes, in either instance, it's still part of the  
8 cellular network whether it's inside or outside the  
9 core network.

10 Q And do you -- you said you listened to Mr.  
11 Lipford's testimony, and he worked in the standards  
12 body. Did you -- did you take that into account in  
13 your analysis? Did anything he said change your  
14 analysis in this case?

15 A No, it's consistent with my understanding in  
16 working with the standards as well.

17 Q And then I think you did it this time in one  
18 click, maybe for my benefit. And I'll try to clear  
19 out the markings. Can you tell the jury what you've  
20 done in slide 40?

21 A Like we did before, now I'm doing the same thing  
22 for the 1999 network reference model. I'm just  
23 simply putting the network elements that are in the  
24 Sprint cellular network where they're at in the  
25 Sprint -- or in -- sorry, in the CDMA network

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1 reference model. You'll see that all of the  
2 different icons are in the core network with the  
3 exception of the wireless terminal that's outside  
4 with the person holding it.

5 Q Now, we've been talking about these entities that  
6 appear in the standards documentation, and I'm  
7 staying here in DX-4, the 1999 CDMA standard. What  
8 does the standard say about how a device may be  
9 physically implemented?

10 A So the standard talks about physical  
11 implementation here, and the entities, the boxes  
12 we've looked at before, were logical. So now the  
13 standard is saying -- and it understands that maybe  
14 the supplier and the network operator want to combine  
15 two or more of those boxes together in one physical  
16 system. And it recognizes that that's the case, and  
17 it has the recommendation or it says this is all  
18 possible and it's okay as long as the implementation  
19 meets the functional requirements. You can't change  
20 the functional requirements.

21 So one of the examples that I've seen quite  
22 often is for the mobile switching center, the switch,  
23 and there's another element named the VLR, visiting  
24 location register. Those are almost always combined  
25 together. And this says that regardless, the

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1 functionality still stays the same for the logical  
2 entities the way they're defined.

3 Q Does the standard also say that you can be  
4 compliant with this recommendation by having a single  
5 network entity that's not combined with any other  
6 one?

7 A Yes.

8 Q In fact, if you read starting with, "The physical  
9 device..." up through "...MSC," what does it say, Mr.  
10 Lanning?

11 A Okay. "The physical device may comprise a single  
12 network entity, such as an MSC." What that means is  
13 that entity could be standalone and just provide the  
14 MSC functionality, or it may comprise some  
15 combination, such as an MSC, the visitor location  
16 register, the home location register, and the  
17 authentication center. And this is where the  
18 physical implementation would include one or more of  
19 those combinations. And as I just explained, it's  
20 very common to see the MSC and the visitor location  
21 register.

22 Now, this is probably a good time to take  
23 you to thinking back about the laundromat and the  
24 laundry example. So this means I could have a washer  
25 and a dryer separately, or if I decide to combine



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1 those in the same unit, that's okay as long as the  
2 functionality stays the same. Now, you might  
3 instantly think well, that's the case if you have one  
4 of these units where you have a washer and dryer on  
5 top of each other. I've combined them physically,  
6 but they still have the same functionality.

7 Q Does the 1999 standard say anywhere, Mr. Lanning,  
8 that the only way that a messaging server can be part  
9 of the core network is if it is integrated with  
10 another core network element?

11 A No, it says the opposite. It says that it can  
12 either be standalone or combined, but it still --  
13 regardless, whichever way it is, it's still part of  
14 the core network.

15 Q Let's turn to slide 42. Can you walk the jury  
16 through this slide that you've prepared, sir?

17 A Okay. I need to start top down. If I look at  
18 the top, along the top you see a grey bar with the  
19 ANSI-based network. That includes the two standards  
20 that I just walked through, 1997, 1999. And then on  
21 the right is an ETSI-based network, the European-  
22 based network, that's included in the patent, the  
23 figure. So you can see, and what I'm trying to show  
24 in contrast, this is -- on the left two is what  
25 Sprint's network has been imp -- the recommendation

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1 for how Sprint's network should be implemented,  
2 meaning that the message center should be internal to  
3 the core network, but the patent is showing that the  
4 message center, or the MMSC, is external to the  
5 network. So now we have a difference in  
6 recommendations. The American recommendations say  
7 put it inside the network; the European  
8 recommendation says put it outside the network, or  
9 external to the network. So we're starting with two  
10 different recommendations and they have differences  
11 of opinion of where the messaging servers should be.

12 Q And between these two, which would you rely on to  
13 understand Sprint's cellular network?

14 A Well, to understand the recommendation for  
15 Sprint's cellular network, I need to look at the left  
16 two because that's the recommendations that are used  
17 by Sprint to built their network.

18 (Pause in proceedings.)

19 Q I've turned, Mr. Lanning to slide 44. Where did  
20 you conclude that Sprint's messaging server is  
21 located?

22 A As I've shown on the slide on the left, the  
23 messaging servers are inside Sprint's core network,  
24 and not, as the patent requires, or the patent claims  
25 to require, that it be external to the network.

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1 Q After you looked at the standards as part of your  
2 analysis, what did you do next to determine whether  
3 the accused messaging servers in this case are inside  
4 of Sprint's cellular network or external to the  
5 cellular network, as the claims require?

6 A As I mentioned, the standards are a starting  
7 point. You have to start where the recommendation,  
8 but that isn't hard and fast. An operator, based on  
9 my experience, can either put the message centers  
10 external to the network or internal. I start with  
11 the standards and see that it's recommended internal,  
12 but that isn't sufficient. I need to now look at how  
13 Sprint implemented their short message centers.

14 Q And in the course of that, did you review Sprint  
15 technical documentation?

16 A Yes, a lot of it.

17 Q Did you also review Sprint fact witness testimony  
18 with respect to how Sprint's cellular network  
19 operates?

20 A Yes.

21 Q And that would be fact testimony that you would  
22 think was important?

23 A Yes, these people were -- we would call them  
24 subject matter experts as engineers. They're working  
25 with these systems. They know how they're connected

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1 and all of the details.

2 Q Well, let's start with some of that technical  
3 documentation. I have put on the screen slide 46,  
4 which is DX-215. Do you see that, Mr. Lanning?

5 A Yes.

6 Q And can you describe for the jury what it is,  
7 sir?

8 A This is one of the Sprint documents, as you can  
9 see by the logo on the yellow top. Specifically,  
10 this is a design document that's written for the  
11 subscriber profile system. You may recall that  
12 that's one of the databases, and you've heard people  
13 talk about it multiple times, about this SPS. So  
14 this document is for the design of the SPS.

15 Q Now, on slide 47, I believe you've annotated  
16 DX-215 from page 22. Can you tell the jury what  
17 you're showing here for their benefit?

18 A Yes. Now, this page is from that document, the  
19 SPS document, and I've highlighted the messaging  
20 parts and where the cites are at. Now, if I look to  
21 the right of the document, down in the key, the  
22 bottom, right, says "core site." It has three  
23 different core sites. There's two in Kansas and one  
24 in Reston, Virginia. And those core sites -- and it  
25 explains what equipment is going -- or is put into

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1 those core sites.

2           You can see by the key on the left there's  
3 a lot of different pieces of equipment that start  
4 with the three letters, SPS. That's the SPS  
5 equipment. There is some other equipment. Then at  
6 the bottom that I've highlighted in yellow is  
7 "messaging." So what I'm showing by this is that the  
8 messaging equipment, the message centers, or the  
9 SMSCs, are co-located with the SPS equipment and  
10 other equipment as well.

11 Q Are these the core sites that Mr. Golla talked  
12 about yesterday in his testimony?

13 A Yes, and I believe even Mr. O'Connor mentioned  
14 that this morning about these core sites. He  
15 explained some of these core sties, what type of  
16 buildings they are.

17 Q And the word "core site," that's not a word  
18 you've added to the document for purposes of your  
19 presentation?

20 A No, I didn't add it, and this was long before  
21 this lawsuit. This is common terminology for  
22 engineers to refer to parts of the network as the  
23 core network and core sites.

24 Q Were you here when Dr. Akl talked about core  
25 network equipment during the course of his testimony?

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1 A Yes.

2 Q And have you seen fit to include a portion of Dr.  
3 Akl's testimony on your slide 48?

4 A Yes.

5 Q And what did Dr. Akl tell this jury?

6 A I've included some of Dr. Akl's testimony and --  
7 when he's describing -- and I'll just read it. "The  
8 core network elements are the component that you  
9 don't see. Those are the ones that are in -- you  
10 know, in data centers. They're underground. Those  
11 are what perform core functionality." So Dr. Akl has  
12 defined these core network elements. He said these  
13 datacenters are core. There's only one issue. All  
14 of the components that are relevant to this trial  
15 that are in these centers, except for the messaging  
16 servers, he says are core network elements or core  
17 elements. However, he excludes the messaging that  
18 sits in the same building with all these other core  
19 elements that he says they're core. So, again, ask  
20 yourself the question does that make sense that you  
21 put an element in all three of these centers with  
22 other core elements, you call all the other elements  
23 core elements, but because messaging needs to be  
24 external to show infringement, he moves the messaging  
25 servers outside?

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1 Q Does slide 49, which I now turn to, depict  
2 another one of the many Sprint technical documents  
3 that you reviewed in the course of your analysis, Mr.  
4 Lanning?

5 A Yes.

6 Q Is that DX-12?

7 A Yes.

8 Q And what is DX-12?

9 A It's another Sprint document. Specifically, this  
10 is a messaging document that deals with replacing MMS  
11 service for Picture Mail. And Picture Mail was a  
12 service that was provided. I think you've heard some  
13 of that, but we'll speak to it a little more later.

14 Q And is this titled a "Detailed Design Document?"

15 A Yes.

16 Q Now, you've put together slide 50. Can you  
17 explain to the jury what they're looking at here?

18 A Okay. So I just want to be clear, this -- what  
19 you see on the screen, I've created a composite from  
20 two different documents, and so I've tried to show  
21 the biggest part of what's on the screen comes from  
22 the document on the top, DX-12, and I've showed the  
23 map that I just showed you a little earlier about the  
24 core sites on the bottom. And what I'm trying to  
25 depict here is more detail for what's in each of

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1 these sites. And so I'm showing by the blowups here  
2 what's in each of these sites. And I don't know if  
3 the next screen has it highlighted or not. Yes,  
4 thank you.

5 If you can see the two boxes with the  
6 highlighting, you'll see two different components  
7 that I've highlighted. One is the SPS, one is the  
8 SMSC. Now, the SMSC is the short message service  
9 center, or the message center. We use the same  
10 terminology. If you notice, that's in the Sprint  
11 core site that's in Kansas. Those two are also in  
12 the Sprint core site in Reston. You've also heard of  
13 those referred to as bunkers because the buildings  
14 were built that way, to be real secure, both  
15 physically and from a people entry point of view.

16 Again, notice what's going on here, and  
17 what I'm trying to point out is that you have the SPS  
18 that Dr. Akl says is a core network element, sitting  
19 next to an SMSC in the same sites that he says is not  
20 a core network element. And he's also said geography  
21 and location doesn't matter, but I believe this adds  
22 more information. Again, going back to the laundry  
23 service. How do you really know whether the washer  
24 and dryer are in the apartment or not? You have to  
25 look at more information. This is more information.



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1 Where are they at? They're right next to each other.  
2 Why should I say that the washer is a core network  
3 element, but the dryer that's sitting right next to  
4 it is not.

5 Q Do you see any basis, Mr. Lanning, for Dr. Akl's  
6 conclusion that the SPS database, which didn't exist  
7 at the time the patent issued, is internal to  
8 Sprint's cellular network, yet the short message  
9 service center is external to Sprint's cellular  
10 network?

11 A Okay. No, I don't, to answer your question, and  
12 let me explain. The SPS is a database. It's a  
13 computer system waiting there with the database and  
14 information in it. You have to query it. When you  
15 query the database it responds back with what's in  
16 the database to the system. What system queries the  
17 SPS database? It is the SMSC. So the SMSC queries  
18 the database, it gets information back from the  
19 database, and performs actions on that information  
20 based on what it gets. So let's think about this  
21 logically. The database that just sits there waiting  
22 for queries Dr. Akl says is an essential element in  
23 the core network. But the system that actually  
24 queries the database, receives the response from the  
25 database, and performs routing and forwarding based

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1 on that information is not. That just doesn't make  
2 any sense to me.

3 Q Do you see what this document is captioned at the  
4 top next to the section 3.1?

5 A Yes.

6 Q And what does it say?

7 A "Sprint Logical In-State Diagram."

8 Q Is that part of your functional, logical, and  
9 physical analysis?

10 A Yes, over the years, I've spent a lot of time  
11 with engineers explaining to them that the process  
12 that you divide and concur, these giant problems that  
13 we have, is you start with functions, group them up  
14 into logical -- into a logical layer, logical  
15 entities, and then you figure out the physical. And  
16 saying it in other words, you start with what, what  
17 do I need to do, the logical is how am I going to do  
18 it, meaning how am I going to place all these  
19 functions together, and then the third step is where  
20 and how many? Then I have to figure out okay, how  
21 many switches do I need, how many SPS databases do I  
22 need, how many message centers do I need, and where  
23 am I going to put them?

24 So now you have a component of logical  
25 components with the functionality and physical of how

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1 many and where am I going to put them? So you have  
2 Sprint in the north bunker in Kansas. Then they put  
3 another one in Reston. There are multiple reasons for  
4 that, but you usually want to split these real  
5 important centers up so that if you lose a center,  
6 whether it's a tornado or whatever, the other center  
7 can keep operating so your network can keep going.

8 Q You have used the term "message center" or  
9 "messaging center" during the course of your  
10 testimony today. Do you intend for that to be  
11 synonymous with the term "messaging server," as  
12 defined by the Court in this case?

13 A Yes. The problem that I have, and I guess I've  
14 created it for you or other people, there's multiple  
15 acronyms for the patent and the construction of  
16 the -- for the term of "messaging server." So I  
17 guess I would say to you when you hear me say  
18 "messaging server," "messaging center," "SMSC,"  
19 "MMSC," they all mean the same thing.

20 Q Thank you, Mr. Lanning. Is DX-13, which I've put  
21 up on slide 52, is that another one of the Sprint  
22 technical documents that you reviewed in the course  
23 of your analysis?

24 A Yes, and this document is focused on the next  
25 generation messaging and imaging. It's a design

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1 document.

2 Q Okay. That was my next question. Do you see  
3 where it says "Design Document" up in the corner?

4 A Yes.

5 Q And have you heard Sprint witnesses testify in  
6 deposition and in this trial with respect to the  
7 importance of the designation design document?

8 A Yes. They are as they imply or they state.  
9 They're design documents. It's the actual design --  
10 it's the blueprint that the Sprint engineers use to  
11 build the system.

12 Q Does DX-13 contain this diagram that is depicted  
13 on your slide 53?

14 A Yes. Yes.

15 Q And is it at what is labeled as "Figure Three" of  
16 that document, sir?

17 A Yes.

18 Q Okay. Am I correct that the red or pinkish  
19 shading in the document is courtesy of Sprint, and  
20 not you?

21 A That's correct.

22 Q And the yellow shading is courtesy of you?

23 A I guess another way to say it, I believe the only  
24 shading or highlighting that I added was in yellow  
25 and I didn't change any of the colors of the lines.

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1 Q Thank you, sir. What does this Spring design  
2 document, DX-13, depict in figure three to you  
3 understanding?

4 A This is a document that had a date on it of 2008,  
5 so this is before the lawsuit. This is Sprint's  
6 terminology. If you see in the highlighting of the  
7 top, right of the box that I've highlighted it says  
8 "Sprint In Network." So Sprint is looking at what's  
9 in network, and at this time you see two highlighted  
10 boxes on the bottom that are labeled "MOMSMC" and  
11 "MTSMSC." Well, add another little bit of  
12 definitions for you, the mobile -- the "MO" stands  
13 for mobile originate, the "MT" stands for mobile  
14 terminate. When they initially implemented it, you  
15 had a messaging server that was for originated  
16 messages when they would be originated at the Sprint  
17 network, and you had one for terminated messages when  
18 they needed to be terminated to a mobile on the  
19 Sprint network.

20 You'll also see another highlighted  
21 database up at the top. That's the message LDAP.  
22 That is the predecessor databases to the SPS  
23 database. That's effectively the same thing as the  
24 SPS. Again, I'm showing they're putting the SMSCs  
25 and the database in the same part of the network that

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1 they label "In Network."

2 Q Is it your understanding that it is Dr. Akl's  
3 opinion in this case that the messaging LDAP depicted  
4 in this diagram is inside of Sprint's cellular  
5 network?

6 A Yes.

7 Q But you also under -- do you also understand,  
8 sir, that it is Dr. Akl's opinion that the SMSCs that  
9 are in this box labeled "In Network" are external to  
10 Sprint's cellular network?

11 A All right. You may recall that Dr. Akl said  
12 don't look at geography, don't look at location, that  
13 all doesn't matter. You need to ask yourself why is  
14 he insisting so strongly on that? You can probably  
15 see by some of these diagrams why he's insisting you  
16 just look at functionality. Because when you look at  
17 everything in a holistic sense, that the  
18 functionality -- even Sprint in their diagrams before  
19 had the database that Dr. Akl says is essential with  
20 the SMSCs, the messaging servers, that he says are  
21 not. Again, here's more proof that they're together,  
22 that they're all internal in the cellular network.

23 Q Do you see at the bottom of the screen the  
24 reference to "Figure Three?"

25 A I see the "Figure Three" text. Is that what

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1     you're asking me?   Yes.

2     Q     It is, sir.   And what does this Sprint document  
3     say is being depicted in figure three?

4     A     And what's being depicted here is referred to as  
5     a post-deployment logical diagram.

6     Q     How does that relate to your opinion that, in  
7     deciding whether Sprint's messaging servers are  
8     internal or external, it is appropriate to consider  
9     functional, logical, and physical?

10    A     Well, it shows all the functionality.   It shows  
11    the logical and it shows the physical and it shows  
12    they're together.

13    Q     Now, does this document represent the whole of  
14    Sprint's cellular network?

15    A     No.   It's probably best to explain there are so  
16    many thousands of pages of documents.   What we try to  
17    do when we write separate design documents from an  
18    engineering point of view is just write the document  
19    and include the information that's important for the  
20    service being provided.   So we looked earlier at an  
21    SPS design document.   That would only include the  
22    information that's important from an SPS perspective  
23    or an SPS person's point of view.   You don't -- if  
24    you included all the network elements every time in  
25    one of these detailed design documents, it would look

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1    like that diagram I showed you from the standard that  
2    had 100 different diagrams on it and it would be all  
3    confusing. So they just really take out the parts of  
4    the network that are not important for the subject  
5    being discussed.

6    Q    Now, turning to slide 54, is this yet another  
7    Sprint design document that you considered?

8           THE COURT: I think maybe we ought to  
9    recess. It's 12:30.

10           MR. FINKELSON: That was my next question.  
11   Aren't you hungry, Mr. Lanning?

12           THE COURT: Well done. And we won't  
13   inquire of the jury whether they wish to recess. I  
14   suspect they do. So we'll recess. It's 12:30.  
15   We'll recess for an hour, ladies and gentlemen.  
16   Remember, no talking among yourselves about the case.  
17   Don't talk to anyone else about the case. If you're  
18   approached by anyone, say nothing and report that to  
19   me. Be sure you take your jury notebooks -- your  
20   juror notebooks and your binders. Leave them in the  
21   jury room. See you back in an hour.

22           MR. FINKELSON: Thank you, Your Honor.

23           (Jury out, 12:32 p.m.)

24           THE COURT: You may step down, Mr. Lanning.

25           (Pause in proceedings.)



Mr. Lanning - Direct

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1 THE COURT: All right, we will be in recess  
2 for an hour.

3 MR. FINKELSON: Thank you, Your Honor.

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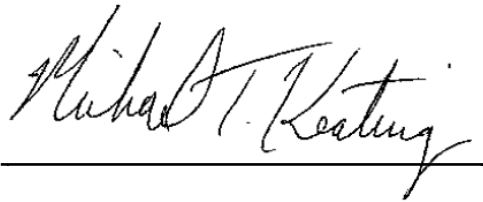


CERTIFICATION

I, Michael Keating, do hereby certify that  
the foregoing is a true and correct transcript from the  
electronic sound recordings of the proceedings in the  
above-captioned matter.

2/8/17

Date

A handwritten signature in cursive script, reading "Michael T. Keating", written over a horizontal line.

Michael Keating